Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

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MERRITT LYNDON FERNALD
HOLLIS WEBSTER
CARROLL WILLIAM DODGE
} Associate Editors

WILLIAM PENN RICH, Publication Committee

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THE NEW ENGLAND BOTANICAL CLUB

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NOTES ON A COLLECTION OF FRESH WATER MYXOPHYCEAE FROM AMOY, CHINA.[1]

N. L. Gardner.

During a recent visit to the Farlow Library and Herbarium, the privileges of which were extended to me for the purpose of working on a large collection of fresh water Myxophyceae collected in Porto Rico by the late Dr. Wille, I took the opportunity to examine also a small collection of fresh water forms which had been sent to the herbarium by Professor H. H. Chung, who collected them in the vicinity of Amoy, China. The material proved to be in excellent condition, having been preserved in formalin and contained a number of forms of considerable interest, some of which have not been previously described, and I am presenting herewith the results of my examination of the different species as I interpret them, with descriptions of such as are new to science.

Merismopedia glauca (Ehrb.) Naeg. A 95.

Chamaesiphon sp. A 83. Material young.

Pleurocapsa fuliginosa Hauck. A 74b. The material of this species is all in the vegetative condition. It answers to Hauck's description and figures in so far as they apply to the vegetative stage.

Spirulina major Kuetz. A 73b. Sparse.

Oscillatoria princeps Vauch. A 94.

O. chalybea (Mertens) Gom. A 73.

O. amphibia Ag. A 73a.

O. tenuis Ag. var. tergestina (Kuetz.) Rab. A 73c.

O. sancta (Kuetz.) Gom. var. caldariorum Lagerh. A 71b.

O. laete-virens (Crouan) Gom. A 107a.

O. irrigua (Kuetz.) Gom. A 67.

[1] Contributions from the Cryptogamic Laboratories of Harvard University, xcii.

O. SUBTILISSIMA Kuetz. var. LITORALIS (Hansg.) DeToni. A 102. PHORMIDIUM CORIUM (Ag.) Gom. A 70.

P. quadripunctulata (Brühl and Biswas.) Gardner, comb. nov. *Oscillatoria quadripunctulata* Brühl and Biswas.[1] A 49, A 86a. The material of this species is attached to the gelatinous tegument of *Rivularia* (Gloeotrichia) *indica* (Schmidle) DeToni, and it has a thin, but very distinct, sheath. The trichomes correspond exactly to the description and figures of Brühl and Biswas (loc. cit.). Although I have not examined any of their material of that species it seems necessary to make the new combination.

P. CABENNENSE Gom. A 88a.

P. ORIENTALE G. S. West, var. **breviarticulata** Gardner, var. nov. Trichomes very slightly constricted at the dissepiments; cells one-third to two-thirds as long as broad, otherwise as the species. Growing on the bank of a ditch. Amoy Island, Fukien Province, China. *H. H. Chung*, A 74, type, in Farlow Herbarium.

P. CALIDUM (Kunth) Gom. A 74a.

P. FOVEOLARUM (Mont.) Gom.

P. bigranulatum Gardner, sp. nov. Filaments scattered on or within the soft tegument of the host, long and relatively straight, 0.8–1.0 μ in diameter; trichome 0.7–0.9 μ in diameter, not constricted at the dissepiments, neither uncinate nor capitate; cells 9–13 μ long, cross walls inconspicuous, with two conspicuous granules at each cross wall, eruginous; sheath imperceptible except where there is a break in the trichome or occasionally at the ends of the trichome. Growing on or within the gelatinous tegument of *Rivularia* (Gloeotrichia) *indica*, attached to submerged aquatic plants. Amoy Island, Fukien Province, China. *H. H. Chung*, A 90a, type, in Farlow Herbarium.

Phormidium bigranulatum, as diagnosed above, is related to *P. laminosum* (Ag.) Gom. and to *P. angustissimum* W. and G. S. West. It differs from the former in being smaller, in having blunt apices, and in having but two, instead of four, granules at the partitions. The latter species is smaller and has no granules.

LYNGBYA EPIPHYTICA Hieron. A 71a.

ANABAENA MACROSPORA Klebh. var. **distorta** Gardner, var. nov. Filaments densely intertwined and much contorted, forming thick abundant, floating masses; cells densely and coarsely granular, the

[1] Brühl, P. and Biswas, K. Commentationes algologicae. I. The algae of Bengal filter-beds. Jour. Dept. Sci. [Univ. Calcutta] Botany. **4:** 5. *pl. 1, fig. 6.* 1922.

granules being irregular in form and dark colored; resting spores more or less asymmetrical, 9–10 μ in diameter, 14–15 μ long, filled with large refringent granules; heterocysts spherical, 7.0–7.4 μ in diameter.

Floating in great abundance along the margin of a pond. Amoy Island, Fukien Province, China. *H. H. Chung* A 93, type in Farlow Herbarium.

The variety differs from the species in having slightly smaller spores and cells, with the spores densely granular and more curved, in having slightly larger heterocysts and in having much distorted filaments.

ANABAENA sp. Sterile. A 53, A 100, A 103 and A 107.

NOSTOC sp. Sterile and young. A 89.

CYLINDROSPERMUM sp. Sterile. A 69.

CALOTHRIX PARIETINA (Naegl.) Thur. A 88.

C. linearis Gardner, sp. nov. Filaments free among other algae, 500–800 μ (occasionally up to 1500 μ) long, slightly enlarged at the base, the remainder linear, sparsely branched; branches usually single and erect, rarely geminate and scytonematoid; trichomes almost cylindrical throughout the entire length, 3–5 cells at the base slightly wider than the remaining cells, these cells later changing into resting spores, 6 μ in diameter at the base, tapering from 6.3–4.0 μ just above the base to 2.5 μ at the apex, terminating in a hair (?) bright eruginous, with relatively large granules in the cell; cells varying from one-third to two-thirds as long as the diameter below to 2.5 to 3 times as long above; heterocysts hemispherical, basal and intercalary (?); sheath thin, hyaline, homogeneous, not ocreate above.

There is no data accompanying this species but presumably it was collected in the vicinity of the University of Amoy, Fukien Province, China. *H. H. Chung*, A 54, type, in Farlow Herbarium.

This species of Calothrix may be distinguished by the relatively long filaments which taper but very slightly and extremely gradually from a short distance above the base to the apex, only a few cells above the base of the trichome being larger than the others. I was unable to find any trichomes with hairs, but since the delicate sheath extends beyond the ends of the trichomes it is presumed that the hairs have disappeared. The branching is sparse and it is not possible to state whether or not the break in the trichome and branching at the point which follows, takes place before or after a heterocyst is formed on the base of the part above. Geminate branching may take place without any heterocysts being formed. The material is apparently young and the few resting spores observed seemed not mature. These were several times longer than the diameter.

RIVULARIA (Gloeotrichia) INDICA (Schmidle) DeToni. A 86, A 90. The material of the two above numbers seems scarcely mature. The resting spores in many cases have not started to develop, but some are 70 × 12–15 μ, with hyaline walls. The spores seem to be formed by the fusion of 2–4 basal cells. The trichomes extend outward and terminate in a long hyaline hair. After the hair dies back, the outer end of the trichome is considerably larger than the middle portion, even down to near the base. The colonies seem larger than those of *R. indica* but the material is all in formalin and the teguments have swollen and fused. It may be that it will be necessary to create a new species for the material when more is known about its life history.

TOLYPOTHRIX **Chungii** Gardner, sp. nov. Filaments 20–24 μ in diameter, forming together with other filamentous algae a free floating, flocculent stratum, sparsely branched; trichomes 18–20 μ in diameter, bright eruginous, not constricted at the dissepiments; cells one-fourth to one-half as long as the diameter, more or less finely granular; heterocysts spherical or in part compressed spherical numerous, single; trichomes mostly conical at the point of attachment to the heterocysts; sheath relatively thin, homogeneous and hyaline in the juvenile state, becoming slightly honey colored or brownish at maturity.

Growing in company with other algae in a pool near the University of Amoy, Fukien Providence, China. *H. H. Chung*, A 71, type, in Farlow Herbarium.

T. tenella Gardner, sp. nov. Filaments aggregated into small tufts or fascicles, 3–4 mm. long, 12–15 μ in diameter; trichomes 10–12 μ in diameter, deeply constricted at the dissepiments; cells one-fourth to one-half as long as broad, eruginous, finely granular, cross walls very thin; heterocysts single, rarely 2–3 catenate, numerous, spherical; sheath hyaline, homogeneous, membranaceous in the juvenile stage becoming thicker and subgelatinous when older.

Growing on stones and small roots in sheltered pools of a mountain stream. Amoy Island, Fukien Province, China. *H. H. Chung*, A 75, type, in Farlow Herbarium.

Tolypothrix tenella is probably most closely related to *T. lanata* (Desv.) Wartmann, from which it differs in having shorter filaments with greater diameter, in having shorter cells which are deeply constricted at the dissepiments, and in part decidedly dolioform in the apical portion of the trichome.

UNIVERSITY OF CALIFORNIA, Berkeley, California.

CAREX LIVIDA AND C. GRAYANA.

M. L. Fernald.

One of the neatest sedges of northern bogs is the very glaucous or almost white plant known as *Carex livida* (Wahlenb.) Willd. In North America this species has its greatest development in Newfoundland and the cooler regions of Canada, and southward it is decidedly local: a single station each in marly bogs of Aroostook Co., Maine, Addison Co., Vermont and Essex Co., Massachusetts (with a tradition of a station in Berkshire Co.[1]); more extensive areas in north-central New York, the New Jersey Pine Barrens and in northern Michigan; and a local colony in Mendocino Co., California. In Eurasia it is confined to Scandinavia and Russia.

As it occurs throughout most of its range *Carex livida* has rather stiff culms up to 4.5 dm. high, with the staminate spike 1.5–2.5 cm. long and borne usually on an elongate peduncle; the 1 or 2 pistillate spikes subapproximate, the lower only very exceptionally on a capillary basal peduncle; and the thick-fusiform to rhomboid perigynia 3.2–4.6 mm. long and tapering to an acute or subacute conical tip. This is the plant most often collected and known as *C. livida* and we find it well described by such specialists on *Carex* as Kükenthal and Mackenzie, the former saying "Utriculi . . . 3½–4 mm. longi . . . in stipitem conspicuum contracti, apice integro acuti,"[2] the latter, "perigynia 3.75 mm. long . . . narrowed and pointed but not beaked at apex."[3] The plant answering these specifications is one of the dominant sedges of wet bogs and tundra of Newfoundland; but on the south side of the Straits of Belle Isle, in Newfoundland, in the region where so many relics of a more ancient flora occur, there is a little plant at once suggesting *C. livida* and occurring in similar habitats, but with low stature (down to 0.5 dm. high), the lower spikes mostly on capillary basal peduncles, the staminate spike only 0.7–1.5 cm. long and short-peduncled, and the perigynia only 2.2–3.2 mm. long and rounded at summit much as in *C. aurea.*

Search in the Gray Herbarium reveals plants with similar characters (though some of them of taller stature) only from Lapland and adjacent regions of Scandinavia and from the Canadian Rocky Mountains.

[1] Becket acc. to Dewey, Am. Journ. Sci. x. 42 (1826) and xli. 329 (1866).
[2] Kükenthal in Engler, Pflanzenr. iv[20]: 510 (1909).
[3] Mackenzie in Abrams, Ill. Fl. i. 322 (1923).

All the sheets seen from the latter region have the short round-topped perigynia and short staminate spike and at least one specimen on each sheet shows the long capillary basal peduncle, but some Lapland specimens, although having short perigynia and short staminate spikes show a definite transition in the form of the perigynia to that of the plant which is generally called *C. livida,* the plant which Chester Dewey in 1834 so beautifully described as *C. Grayana,* "Found in 1832 in a sphagnous swamp, near Utica, N. Y., by Dr. A. Gray, an active botanist."[1] When he published *C. Grayana* Dewey said, "It is a beautiful species, and has a remote resemblance to *C. livida,* Wahl., which grows two or three inches high in the marshes of Lapland"; but in 1835 Gray, himself, reduced *C. Grayana* outright to *C. livida,* saying: "My specimens agree in every respect with an European specimen of *C. livida* in the herbarium of the late Rev. Mr. Schweinitz; but I have never noticed the distant or subradical peduncles, as in Schkuhr's figure."[2] Dewey promptly accepted Gray's decision and in his *Index to Species* which closed his long series on *Caricography* he cited it[3] only as a synonym of *C. livida.*

In view of the discovery in northwestern Newfoundland of the little plant with short round-topped perigynia, short staminate spike and remote subradical peduncles, a plant matched in its technical points by specimens from Lapland and from the Canadian Rocky Mountains (a very characteristic and frequent range) Wahlenberg's original description of *C. limosa* δ. *C. livida* at once becomes illuminating:

"δ. *C. livida:* spicis subbreviter pedunculatis paucifloris, bracteis amplectentibus foliaceis infima remotissima . . . capsulis ovato-suboblongis triquetro-depressis obtusiusculis . . . *Hab.* in paludibus ad fontes sylvestres Lapponiae Enontekensis."[4]

Furthermore, Willdenow, who raised Wahlenberg's variety to specific rank, gave a description perfectly applicable to the little plant of northwestern Newfoundland:

"CAREX *livida.*

C. spica mascula solitaria, foemineis binis subsexfloris, superiore incluse pedunculata, inferiore subradicali pedunculata, stigmatibus tribus, fructibus oblongis triquetris utrinque angustatis obtusis squamam oblongam aequantibus."[5]

[1] Dewey, Am. Journ. Sci. xxv. 141, t. S. fig. 59 (1834).
[2] Gray, Ann. Lyc. N. Y. iii. 234 (1835).
[3] Dewey, Am. Journ. Sci. xlii. 330 (1866).
[4] Wahlenb. Vet.-Akad. Nya Handl. Stockholm, xxiv. 162 (1803).
[5] Willd. Sp. Pl. iv. 285 (1805).

Schkuhr's figure[1] of *C. livida*, although crude, shows a plant with remote subradical pistillate spikes and short staminate spikes, but the perigynia are shown as transitional in form between the most extreme plant with round-tipped perigynia and the more generally known *C. Grayana*. Kükenthal (*l. c.*), citing Schkuhr's figure, characterizes it as "mala!" As an illustration of *C. Grayana*, which Kükenthal describes as *C. livida*, it is certainly poor; as an illustration of the rarer plant, which seems to be what Wahlenberg and Willdenow first had, it is not so bad. It was drawn from very immature material with the anthers and the stigmas intact and the perigynia not yet distended. In this connection Asa Gray's comment, when reducing to *C. livida* Dewey's *C. Grayana*, is interesting: "but I have never noticed the distant or subradical peduncles, as in Schkuhr's figure." *C. Grayana* very rarely does produce remote subradical long peduncles (*C. livida*, var. *radicalis* Paine[2]) but plants with such basal peduncles are exceptional individuals and in no wise a true geographic variety. It seems, however, that *Carex Grayana* should be revived as a well defined variety of *C. livida*.

Carex livida and its extreme variation, *C. Grayana*, have the terminal spike strictly staminate or in very rare individuals with a few pistillate flowers at base. Somewhat west of the region where true *C. livida* was found in northern Newfoundland, Messrs. Long, Wiegand and I got another plant which in habit, pale foliage, short round-tipped minutely papillose perigynia and 3 stigmas is typical *C. livida*, but with the terminal spikes uniformly gynaecandrous, so that the plant strongly suggests *C. rufina* Drejer, a rare species of Scandinavia and Greenland. *C. rufina* and its close relative, *C. bicolor* All., which is frequent in northwestern Newfoundland, both have 2 instead of 3 stigmas and the strange plant of the barrens at Four-Mile Cove cannot be put with them. Differing from *C. livida* only in having the terminal spike gynaecandrous, it is probably best treated as an extreme variety of that species. The *Carices* with gynaecandrous terminal spikes are, however, generally so constant in this character that, when this plant is secured in mature condition, it may well prove to merit recognition as a species.

The variations of *Carex livida* here discussed may be summarized as follows.

[1] Schkuhr, Riedgr. ii. 58, t. Ssss, fig. 211 (1806).
[2] Paine, 18th Ann. Rep. N. Y. State Cabinet, 159 (1865).

CAREX LIVIDA (Wahlenb.) Willd., var. **typica.** *C. limosa* δ. *C. livida* Wahlenb. Vet.-Akad. Nya. Handl. Stockholm, xxiv. 162 (1803). *C. livida* (Wahlenb.) Willd. Sp. Pl. iv. 285 (1805); Schkuhr, Riedgr. ii. 58, t. Ssss, fig. 211 (1806).—Culms 0.5–3 dm. high: lower spike often remote, subradical and on a capillary peduncle: terminal spike staminate, 0.7–1.5 cm. long: perigynia 2.2–3.2 mm. long, rounded or obtuse at summit.—Lapland and adjacent northern Scandinavia; northwestern Newfoundland; southern Alberta. The following are characteristic American specimens. NEWFOUNDLAND: turfy limestone barrens, northern half of Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss,* no. 27,672. ALBERTA: bog, Lake Louise, *Brainerd,* no. 102; Banff, *J. Macoun,* no. 7444; Laggan, *J. Macoun,* no. 64,154.

Var. **Grayana** (Dewey), n. comb. *C. Grayana* Dewey, Am. Journ. Sci. xxv. 141, t. S, fig. 59 (1834). *C. livida* of most authors.—Culms 1.5–4.5 dm. high, rarely with basal spikes: terminal spike staminate, 1.5–2.5 cm. long: perigynia 3.2–4.6 mm. long, thick-fusiform to rhomboid, tapering above to an acute or slenderly-conical summit,—Scandinavia and Russia; Straits of Belle Isle, Labrador to Alaska, s. to Newfoundland (common), the Magdalen Islands, southern Aroostook Co., Maine (Crystal), Addison Co., Vermont (Bristol), Essex Co. (Boxford) and Berkshire Co. (Becket), Massachusetts, north-central New York (Herkimer Co. to Monroe Co.), Pine Barrens of New Jersey, northern Michigan and Mendocino Co., California.

I am fully aware of *C. livida,* var. *radicalis* Paine, 18th Ann. Rep. N. Y. State Cabinet, 159 (1865), but that is only a very exceptional departure from the widespread var. *Grayana,* its own author specifically stating that "Specimens of this variety are very scarce, perhaps two or three occurring in a hundred of the regular species." To take up for *C. Grayana* the name *C. livida,* var. *radicalis* would lead only to confusion.

Var. **rufinaeformis,** n. var., var. typicam simulans; differt spica superiori gynaecandra.—NEWFOUNDLAND: wet muddy hollow in limestone gravel-barren, Four-Mile Cove, Straits of Belle Isle, July 20, 1925, *Fernald, Wiegand & Long,* no. 27,673 (TYPE in Gray Herb.).

GRAY HERBARIUM.

NOTES ON THE RANGE OF MAIANTHEMUM CANADENSE AND ITS VARIETY INTERIUS.

F. K. Butters.

In 1904, Fernald[1] described as a new variety (var. *interius*) the pubescent form of *Maianthemum canadense* which occurs in the region of the Great Lakes and westward. At that time he found that all the specimens of this species from Michigan and eastward were glabrous, while with a single exception all those from "western Ontario, Manitoba, Saskatchewan, and Alberta, southward to South Dakota, Iowa and Illinois" were pubescent. More recently pubescent specimens have been found from Oswego County, N. Y.[2] and even from Massachusetts; while my studies of the flora of Minnesota indicate that both varieties are common in that state, though with quite distinct ranges. It seems worth while, therefore, to note as definitely as possible the range of the two varieties, both in Minnesota and in the country at large.

Typical *M. canadense* (the glabrous form) is, as Fernald pointed out, northeastern, but it extends down the Alleghenies to North Carolina, and westward along the upper Great Lakes into Minnesota, being confined in that state almost entirely to the region of boreal coniferous forests. Of eighteen Minnesota specimens of this form in the herbarium of the University of Minnesota, seven are from north of Lake Superior, and all but two of the others are from the north central part of the state, reaching as far west as Lake Itasca. South of the region of general coniferous forest, it occurs very sparingly with other boreal plants in cold tamarack swamps near the eastern edge of the state as far south as St. Paul, and there is a single specimen from Lake City, Wabasha County, in the southeastern part of the state—a region where plants of relatively boreal character often occur sporadically.

Outside of Minnesota, but in the general region of the Great Lakes, there are specimens of typical *M. canadense* in the Minnesota herbarium from the following stations: Western New York: Lowman's Swamp, Chemung Co., May 30, 1884, *T. F. Lucy;* rich deciduous woods, Van Etten township, Chemung Co., June 3, 1915, *L. H.*

[1] Fernald, M. L., *The Western Variety of Maianthemum canadense.* Rhodora xvi, 210 (1914).

[2] Fernald, M. L., and Wiegand, K. M., *Notes on some Plants of the Ontario and St. Lawrence Basins, New York.* Rhodora xxv, 219 (1923).

Mac Daniels, A. J. Eames, no. 3727; Ithaca, June 2, 1891, *Elias J. Durand* (a mixture of the two varieties). OHIO: woods, Parma. May 1, 1894, *J. R. Watson;* Berea, May, 1897, *G. B. Ashcroft,* flora of the Western Reserve. MICHIGAN: swamp, Lake Harbor, May 28, 1898, *L. M. Umbach;* moist rich soil, Grand Rapids, June 1, 1894, *Emma J. Cole* (mixed); moist woods, Hamilton, May 30, 1891, *C. L. Herron* (mixed). INDIANA: thickets, Pine, May 15, 1896, and July 9, 1897, *L. M. Umbach* (mixed). WISCONSIN: pine woods, St. Croix Falls, June 5, 1920, *F. K. Butters* (mixed). Fernald[1] also cites a specimen from Brown County, Wisconsin.

It appears, therefore, that this essentially northeastern plant extends along the whole length of the Great Lakes, that westward it becomes quite definitely a plant of the coniferous forest, and that along the southern border of its range it frequently occurs mixed with the pubescent variety.

Maianthemum canadense var. *interius* in Minnesota is distinctly a plant of the deciduous forest, and is particularly abundant in the rather acid oak woods of the east central and southeastern parts of of the state. It is less common in the heavier forests which occupy the richer calcareous soils farther west, but it occurs there, and even in some of the prairie groves in the extreme western and northwestern parts of the state. It occurs occasionally in Tamarack swamps, and in such situations may sometimes be found growing with the glabrous form. For the most part it barely encroaches on the northeastern belt of coniferous forest, and when it does enter this region it is in company with the typical trees and herbs of the deciduous woodlands. Thus the only collection from north of Lake Superior is from eastern Cook County, a few miles back from Grand Portage, where it occurs in an almost pure forest of hard maple along with a number of other plants of relatively southern distribution. In the Minnesota herbarium there are 43 Minnesota collections of this variety, 15 of typical *M. canadense,* and three mixed collections, two from the vicinity of Brainerd, and one from Lake City.

In addition to the mixed specimens cited under typical *M. canadense* and the specimens cited by Fernald in his original paper, specimens of *M. canadense* var. *interius* have been seen from the following stations outside of Minnesota: MACKENZIE: Ft. Smith, June 25, 1901, *E. A. Preble & A. E. Preble,* plants of Canada (specimen in the Na-

[1] Loc. cit. 210.

tional Herbarium). North Dakota: rich woods, Walhalla, July 8, 1912, *H. F. Bergman.* South Dakota: Piedmont, June, 1895, *Alice D. Pratt.* Iowa: woods, Fayette, May 20, 1894, *Bruce Fink.* Wisconsin: Galesville, June 1, 1889, *Sidney C. White, Jr.* Indiana: Lake Everett, Allen Co., May 26, 1916, *Chas. C. Deam.* New York: Sandy Creek Township, Oswego Co., Aug. 25, 1922, *M. L. Fernald, K. M. Wiegand & A. J. Eames* (Herb. Gray). Massachusetts: clay soil, Chicopee, May 18, 1913, *John Murdock, Jr. & G. S. Torrey* (Herb. N. E. Bot. Club—this specimen was kindly called to my attention by Professor Fernald).

It appears, therefore, that this essentially western variety, *M. canadense* var. *interius*, occurs sparingly eastward along the south side of the Great Lakes, and even in western New England. Apparently it does not follow the typical form into the more southern part of the latter's range in the southern Alleghenies, nor does it anywhere penetrate far into the northeastern coniferous forest.

The taxonomic relations of these two varieties have proved to be very interesting, but a discussion of these relations, and also of the taxonomy of the other species and varieties of the genus *Maianthemum* is reserved for another paper which is at present in preparation.

University of Minnesota.

POLYGONUM HYDROPIPEROIDES AND P. OPELOUSANUM.

E. E. Stanford.

Polygonum hydropiperoides Michx., like many other early-described species, suffered from much early confusion in the literature. In its typical region it is an essentially well marked species, but material collected over a wide area, as represented by the collections of the Gray Herbarium, presents many puzzling variations in both habital and technical characters. Some, but by no means all, of these aberrancies have been described as varieties. The species often becomes semi-aquatic, but the characteristic ecological forms which mark *P. natans* and *P. coccineum* are absent. Many of the variations observed in the course of this study occur apparently as isolated examples in scattered areas; they are often characterized by a larger proportion of defective pollen than is usually found in more typical specimens, but, unlike the amphibious species, they are usually

productive of apparently normal achenes. Occasionally the characters suggest blending with other species. It has been conjectured in an earlier paper that many observable variations may be due in part at least to hybrid origins. It is not proposed, however, to publish the material which gives rise to such suspicion as hybrid; the evidence and conjecture are offered mainly to call the attention of students of variation to the phenomena, in order that further studies, particularly in the field, may more fully elucidate the matter. There remain, beside what is considered the type, several definite variations referable to *P. hydropiperoides*, and some account of the literature is in order to indicate something of their history and affinities.

Walter published *Polygonum barbatum* "stipulis truncatis setaceo-ciliatis *dorso pilosis;* spica virgata, *basi scabra.*"[1] The brief description is applicable as far as it goes; it was published, however, under the general heading: "Persicariae pistillo bifido aut staminibus minus 8."

Except in *P. persicarioides* HBK. (which, as later stated, it is proposed to reduce to a variety of *P. hydropiperoides*), which is not reported in Walter's area, and a Californian variety herein described as new, *P. hydropiperoides* is characteristically trigynous, though the stamens are characteristically eight, but sometimes reduced in number. It may be pointed out, furthermore, that Walter, under the same heading, described *P. hirsutum*, in which the same conditions obtain. The name *P. barbatum* had been used for a Chinese plant described by Linnaeus, with which Walter doubtless confused his plant (Walter's work gives no citations). The name *P. barbatum* occurs in some later American works; *e. g.* Barton (1818) where from the description its applicability to *P. hydropiperoides* is more clear.

Polygonum hydropiperoides was published by Michaux.

"P. stipulis undique hirsutis, promisse ciliatis: foliis angusto-lanceolatis, sessilibus, minutim asperiusculeque hirsutulis: spicis linearibus, debilibus; bracteis subimbricatis, ciliatis; floribus octandris, semitrigynis. *Obs.* Habitus *Hydropiperis:* non acre; folia angustiora: flores purpurascentes, raro 7-andri. *Hab.* in Pennsylvania, Virginia, Carolina."[2]

The name was used by Pursh (1814) for the still more *Hydropiper* like plant later to be described by Elliott as *P. punctatum.* Bigelow used it for a "*Hairy Polygonum.*"

[1] Walt. Fl. Car. 131 (1788).
[2] Michx. Fl. Bor.-Am. i. 239 (1803).

"Stamens eight, styles three, half-united; stipules hairy and ciliate; leaves lanceolate, sessile, somewhat hairy; spikes linear, weak; bractes subimbricate, ciliate.

This plant, which is occasionally found about Boston in low grounds, is not the *P. hydropiperoides* of Pursh, nor *P. mite* of Elliott. The whole stem is hairy and branched, and the spikes numerous. The rest agrees exactly with Michaux's description, except that the flowers, as far as I have observed, have fewer stamens."[1]

Bigelow's description is cited without question under *P. hydropiperoides* in the bibliographies of both Meisner and Small; but, except for the three-cleft style, the description suggests nothing but *P. Careyi* Olney, a characteristic species of eastern Massachusetts, of which Bigelow's description is probably the first published notice, the "fewer stamens" of Bigelow agreeing with the five to eight stamens found in *P. Careyi.*

The name of Michaux was correctly used by Gray in the first edition of the Manual (1848) and it has been generally interpreted correctly in subsequent treatments of the group.

A name frequently used in the older works is *P. mite* Pers.[2] not Schrank. *P. hydropiperoides* Michx. was cited by Persoon as a synonym, and the description is applicable except for " fol. anguste lanceolatis hirsutis" which, in point of hairiness, seems a little excessive. No type locality is given except "Amer. boreali." Elliott, under *P. mite* Pers., stresses the same character: "leaves lanceolate, acuminate, entire, hairy . . . .

"Stipules about an inch long, very hairy, and terminated by a long fringe . . . *Corolla* white . . ."[3]

Elliott's characterization, with what can be inferred of the size of the plant from the rather large stipules, seems to run close to *P. setaceum* Baldwin, a considerably larger, more robust, and scabrous plant evidently closely related to *P. hydropiperoides.* But *P. setaceum* was first published by Elliott for Baldwin on the preceding page. Material of *P. hydropiperoides* from Elliott's section of the country is not particularly well represented in the specimens at hand, but one gets the impression from examination of southern types of both species that *P. hydropiperoides* and *P. setaceum* sometimes approach each other more closely than the extreme type of either would suggest. The quoted portions of Elliott's description would seem to apply

[1] Bigel. Fl. Bost. ed. 2: 156 (1824).
[2] Pers. Syn. 1. 440 (1805).
[3] Ell. Sk. 1. 456 (1817).

to a median form rather than the usually purplish-flowered and barely strigose *P. hydropiperoides*. This leaf-hairiness seems to be associated with the early descriptions of *P. mite* Pers. which otherwise correspond closely to Michaux's plant.

Polygonum hydropiperoides, or material referable to it, has also been reported from outside the United States and Canada. *P. persicarioides* HBK. was described in 1818 from "*aquis stagnantibus Regni Mexicani prope Queretaro.*" The description[1] is on the whole more suggestive of *P. hydropiperoides* than of the *P. Persicaria* which the plant suggested to Kunth. Points of difference from the more Northern plant (which may not have been seen by Kunth) are: "CALYX quadripartitus, glaber, albidus. STAMINA sex teste Bonplandio. STYLUS bifidus . . . AKENIUM lenticulare, umbonatum." Chamisso and Schlechtendal reported[2] from Chile a plant which they referred with some doubt to *P. persicarioides*. Meisner, confirming the identification and extending the range to include Colombia, Guiana, Peru, and Brazil, included in the description of the South American material of *P. persicarioides* these variations: "staminibus 7–8 styloque semi-2–3-fido subinclusis; nucula parvula biconvexo-lenticulari v. trigona . . . SPICAE . . . densi-florae. CALYX 5-partitus (ex Kunth. l. c. 4-partitus, qualem nunquam inveni)."[3] In the same publication Meisner also described *P. hydropiperoides* from Brazil. Describing *P. persicarioides* again he stated it to be "Proximum P. Ludoviciano et nodoso, ab illo praecipue pedunculis glabris, ab hoc bracteis truncatis ciliolatis etc. dignoscendum."[4]

The chief demonstrable difference in the material at hand may be summed up as a somewhat more dense type of inflorescence in *P. persicarioides* (a character in which *P. hydropiperoides* varies considerably), the presence of lenticular as well as trigonous achenes, and a tendency of the latter (not always evident) to somewhat greater proportionate elongation. There is also a tendency toward a greater strigosity. The South American material in the Gray Herbarium (with the exception of certain Chilean specimens) belongs here rather than with *P. hydropiperoides* proper. In view of the generally narrow range of difference and the tendency of the types to inter-

[1] HBK. Nov. Gen. et Sp. ii. 179 (1818).
[2] C. & S. Linnaea, iii. 44 (1828).
[3] Meisn., in Mart. Fl. Bras. v. pt. 1: 16, 17 (1855).
[4] Meisn. in DC. Prodr. xiv, 117 (1856).

grade at the southern limit of typical *P. hydropiperoides* in the south and southwest, it seems appropriate to reduce *P. persicarioides* to a variety of *P. hydropiperoides*.

Chamisso & Schlechtendal published a detailed description of *Polygonum virgatum*[1] from Chile and Brazil; but Meisner in 1855,[2] citing the original material, reduced the species to varietal rank under *P. hydropiperoides* and he later summed up the differences; as to the var. *virgatum:*

"ochrearum bractearumque ciliis longioribus (illis 3–4 lin., his 1–2 lin. longis), foliis utrinque diutius pubescentibus . . . Forma P. persicarioide et setaceo valde similis, sed ab illo discrepans ciliis longioribus, spicis tenuioribus et achaenio, etc.; ab hoc spicis tenuioribus, ochrearum setis brevioribus, foliorum pilis tenerioribus nec setiformibus."[3]

This is certainly suggestive of Elliott's somewhat hairy *P. mite*. Meisner, furthermore, cited material from Louisiana, Florida, and Mexico. *P. virgatum* was reduced by Small to synonymy with *P. hydropiperoides*, and the material at hand does not justify other disposition of it, though search for a form intermediate between *P. hydropiperoides* and *P. setaceum* might re-establish *P. hydropiperoides* var. *virgatum* (C. & S.) Meisner.

In 1892, Small described *P. hydropiperoides* var. *strigosum:*

"One and a half to two feet tall. Stem clothed with stout, appressed hairs; leaves lanceolate to linear-lanceolate, obtuse, strigillose; sheaths averaging half an inch long, densely strigose and long-ciliate; bracts strigillose and ciliate; flowers whitish.

Indiana: Indianapolis, along the White River (Britton); West Virginia: Preston Co., along the Cheat River (J. D. Smith); Canada: Gatineau River (Macoun) . . . .

Its almost white flowers, dense strigoseness and heavier habit separate it very clearly from the typical form."[4]

In 1895, however, Small changed the name to *P. hydropiperoides Macouni*, and gave the range as "Ontario, West Virginia, Indiana and California."[5] This is again suggestive of Elliott's hairy *P. mite* and of the *P. virgatum* of Chamisso & Schlechtendal, though from quite a different range. Material, including a specimen of Macoun's from Gatineau River, Quebec, shows fine strigosity of the

[1] C. & S. l. c. 45 (1828).
[2] Meisn. in Mart. Fl. Bras. v. pt. 1: 18 (1855).
[3] Meisn. in DC. Prodr. xiv. 103 (1856).
[4] Small, Bull. Torr. Bot. Cl. xix. 355 (1892).
[5] Small, Mem. Dept. Bot. Columb. Col. i. 81 (1895).

stem, barely visible without a hand-lens, but scarcely "stout appressed hairs." Strigose material from California appears, on account of the tendency to production of lenticular achenes, referable to a new variety to be described in this paper. Small's variety is recognized in the 7th edition of Gray's Manual and in the first edition of Britton & Brown, but reduced (under the genus *Persicaria*) to synonymy in the second edition. It is not recognized in Small's Flora of the Southeastern United States; the description of *Persicaria hydropiperoides* as "sometimes slightly strigillose" would seem to include the plant. If the variety is to be recognized to include all strigillose material, the description should be emended to include flowers of the typical color. The varietal name *strigosum* has priority over the later chosen var. *Macouni*. To the present writer the plant appears of formal rather than varietal rank.

St. John, in 1921, described *Polygonum hydropiperoides* var. *psilostachyum* from Sable Island and the state of Washington:

"Differing . . . in having glabrous eciliolate ocreolae which have scarious transparent margins, and in the glabrous or glabrate comparatively short leaves, 4–8 cm. long, 0.8–2.4 cm. wide."[1]

The Sable Island type material is well marked; in habit it resembles a reduced specimen of the hybrid *P. hydropiperoides* × *robustius* rather more closely than typical *P. hydropiperoides*. It also possesses a larger proportion of defective pollen than the latter usually exhibits. Fruit production appears normal. St. John's publication cites *P. lapathifolium* L., and its var. *prostratum* Wimmer, *P. scabrum* Moench, *P. Hydropiper* L. and *P. Persicaria* on the island. The appearance of *P. hydropiperoides* var. *psilostachyum* does not particularly suggest admixture from any of these stocks. The Washington specimens cited by St. John are slightly less marked in the technical characters given. Other material from the Pacific Northwest in the Gray Herbarium represents a median form in possessing the ciliation and puberulent tendency of the typical species with the habital aspect of the variety *psilostachyum*.

The panicle of *P. hydropiperoides* is usually slender and simple. In some localities, particularly in Nova Scotia and California, the peduncle shows a tendency to branch in a digitate manner. Fernald in 1922, described from Nova Scotia a particularly vigorous and long-leaved plant as *P. hydropiperoides*, var. *digitatum:*

[1] St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 71 (1921).

"Plant 1–1.5 m. high; leaves linear-lanceolate, attenuate, mostly 1.3–2 dm. long: spikes densely flowered, 0.5–1 cm. thick, mostly crowded at the tips of the branches . . . .Differing . . . in its great height, very elongate leaves, thick crowded spikes and very late flowering."[1]

This latter character was again emphasized by the same author in a later publication.[2] Typical *P. hydropiperoides* in the same region was in maturity from mid-July through August, while the variety *digitatum* barely showed color in the inflorescences on August 23, and was in anthesis in October.

Moore, in 1914, published a white-flowered plant as *P. hydropiperoides,* forma *leucochranthum.*[3]

(*To be continued.*)

A Further Note on Cimicifuga racemosa in Massachusetts.—In 1920, I found *Cimicifuga racemosa* growing naturally and abundantly in Sheffield, in the southwest corner of Massachusetts.

Believing after some research that the plant had "rarely, if ever, been found in New England north of Connecticut except in cultivation or as a garden escape," I made a record of my discovery and some observations concerning this interesting plant and its occurrence in Massachusetts. (See Rhodora, xxiii. 202, Sept. 1921.)

Its range had been given in the Gray Manual (1908) as "s. N. E. to Wisc., and southw.; cultivated and escaped eastw." I therefore cited two collections in the herbarium of the New England Botanical Club as probably such escapes, viz. one by Parlin in 1899 from "North Berwick, Maine, growing in an orchard from planted roots"; the other by John Murdoch, Jr., July 22, 1913 from "Bernardston, Mass., woods in east part of town."

Mr. Murdoch died in 1915 and I could only express the hope that my note might be productive of information which would verify not only the occurrence of the plant here, but determine its status as indigenous, or as "cultivated and escaped eastward." My wish was soon gratified and I received reliable information from two persons living in Greenfield who knew the plant well, and to whose gardens plants had long ago been transplanted from this station in the adjoining town of Bernardston.

[1] Fernald, Rhodora, xxiii. 260 (1922).
[2] Fernald, Rhodora, xxiv. 173 (1922).
[3] A. H. Moore, Rhodora, xvi. 129 (1914).

Finally, after many invitations, the opportunity came for a personal examination of the station and on June 23, 1925, with Miss Bertha E. Christiansen, I visited the low open wild woods in the east part of the town where, remote from habitation, still grew the small native colony of Black Snakeroot, from which came Murdoch's specimens in 1913.

It is pleasant now to add this note to what I wrote in RHODORA in 1921, as it brings this attractive plant sixty miles further as a native into Massachusetts, and nearly to the Connecticut River and to the Vermont line.—J. R. CHURCHILL, Dorchester, Massachusetts.

VICTORIN'S TREATMENT OF THE LYCOPODIALES OF QUEBEC.

CLARENCE H. KNOWLTON.

IN his significant monograph of the club mosses[1] of Quebec Brother Victorin has added a companion volume to his fascinating work on the ferns[2] of the same region. Like that it falls into two parts, discussion and systematic treatment. The present volume treats very fully four species of Isoëtes, three of Selaginella, and no less than eleven of Lycopodium, together with many varieties and forms, of which several are new to science.

The author shows himself thoroughly familiar with the geological history of eastern North America and its relation to the flora. He has carefully studied the literature of the group, with special attention to the work of Lloyd and Underwood. The result is a scholarly and interesting treatise showing good and critical judgment, the result of twenty years of close observation in the field.

The ranges of the species are very carefully worked out. Especially unique is that of *Lycopodium tristachyum*, found only in eastern temperate North America, in south-central Europe and Asia Minor. "What we know personally of its occurrence here, combined with what we read of its occurrence in Europe, makes us suspect that this may be a case of a former riparian species, bordering the warmer seas, such as the sea of the Champlain period, and which might continue to live on the sands after the disappearance of the lakes and seas and the change of the dune or of the beach into heath, savanna or open pine wood. . . . The localities known in Quebec are usually situated on old shore lines of the Champlain sea."

[1] **Les Lycopodinées du Québec et leurs formes mineurs, par Frère Marie-Victorin. Contributions du Laboratoire de Botanique de l'Université de Montréal. 8vo. 121 pp. $1.00.**

[2] **Les Filicinées du Québec, par Frère Marie-Victorin. Contributions du Laboratoire de Botanique de l'Université de Montréal. 8vo. 98pp. $1.00.**

Much more is known of the group *Complanata* in North America than twenty-five years ago, which has enabled Brother Victorin to analyze the group more carefully than has been possible before. Especially clear is his description of *L. flabelliforme* as an Appalachian species distinct from, but overlapping a little in its range the more widely-distributed *L. complanatum*. "The latter is circumboreal, but not strictly circumpolar, as it is lacking in Arctic America, but it extends under one form or another into northern and central Europe, and into Asia as far as India and eastern Siberia. Besides its northern distribution in America, it occupies another definitely circumscribed area which extends along the Cordillera from southern Mexico into South America." In the group are distinguished five species, six "variations normales, géographiques, écologiques ou tératologiques," and four additional provisional varieties covering a mass of transitional material, probably of hybrid origin.

"May we not truthfully assume that this group was one of the universal elements on the floor of the great and uniform forest of Abiétinées and Cycadinées that during the Lower Cretaceous occupied North America and by the Atlantic bridge extended to the margin of the actual European continent? Later geologic history would explain well enough the actual polymorphism of the group, a polymorphism which would be due more to successive migrations and isolations than to the modifying influence of present-day conditions.

"And we should have, repeated in the limited circle of a little group of related species, the very same facts which dominate the distribution of the flora of northeastern North America."

The author, then, taking *L. sabinaefolium*, var. *sitchense* as the simplest form now known in the *Complanata*, diagrams a possible line of descent for the other forms, showing possible hybridity. This is so skilfully done that at each of the three major nodes of the diagram come forms which actually live together in the same region. There is also a similar but simpler "Phylogène hypothétique" for the *Clavata*.

As in "Les Filicinées du Québec," the systematic treatment includes very interesting notes after each species. These give all that is known of the generative cycle and the ecological relations of the species, with folklore and uses.

The characterization of species, varieties and forms is full and clear, with abundant citations, mostly of Quebec specimens. The number of minor forms described ought surely to stimulate botanists to more extensive collecting of *Lycopodium* material. There are eleven good figures and one plate in the text. There are also numerous quotations from previous students of the genus in Europe and America.

Hingham, Massachusetts.

Bromus ciliatus L., var. **denudatus** (Wiegand), n. comb.,—*B. ciliatus*, forma *denudatus* Wiegand, Rhodora, xxiv. 91 (1922).

When Professor Wiegand published var. *denudatus* merely as a form, he spoke of it as occurring "Throughout the range of the typical form" of the species, the plant with the median and upper sheaths villous or pilose. In my own experience, however, I have long considered the plant with glabrous upper sheaths not only as of more boreal general range but as having a strong tendency to shorter and broader leaf-blades; and a study of the collections of the Gray Herbarium and of the New England Botanical Club shows these tendencies to be even stronger than I had supposed. For instance, selecting certain northeastern areas the floras of which have been much collected, I find that these two herbaria have from the selected colder areas: 8 sheets of typical *B. ciliatus* from Newfoundland but 23 of var. *denudatus;* 0 sheets of typical *B. ciliatus* from the Gaspé Peninsula but 19 of var. *denudatus;* from the east coast of Maine 4 of typical *B. ciliatus*, 12 of var. *denudatus*. from Willoughby, Vermont 0 typical *B. ciliatus*, 7 of var. *denudatus*. For selected warmer areas the figures are: central and southern Maine, typical *B. ciliatus* 36, var. *denudatus* 11; central and southern New Hampshire, typical *B. ciliatus* 16, var. *denudatus* 0; Connecticut, typical *B. ciliatus* 10, var. *denudatus* 0. In western Newfoundland var. *denudatus* ascends to the high mountain-meadows, typical *B. ciliatus* being confined to low altitudes; on the Gaspé Peninsula, where no typical *B. ciliatus* has been found, var. *denudatus* ascends to the highest alpine meadows of the Shickshock Mts. (1000–1125 m.) and in the White Mountain region, where the plant with pilose sheaths is confined to the lower altitudes, var. *denudatus* reaches the Fan of Huntington Ravine.—M. L. Fernald, Gray Herbarium.

The date of the December issue (unpublished as this goes to press) will be announced later.

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

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THE RAGGED ORCHIS OF NEWFOUNDLAND.

M. L. Fernald.

Habenaria lacera (Michx.) R. Br., var. **terrae-novae**, n. var., minor 1.3–4.5 dm. alta; foliis 2–4(rarissime–6); racemo inter anthesin 3–10 cm. longo; floribus minoribus; labello 7–10 mm. longo plerumque minus dissecto.—Newfoundland: boggy meadows, Killigrew's, August 3, 1911 (flowers cream-white, rarely crimson), *Fernald & Wiegand*, no. 5216; marsh, Holyrood, August 22, 1894, *Robinson & Schrenk;* Barred Islands, August, 1903, *Sornborger;* open tundra along Junction Brook, July 12 and 13, 1911 (outside of sepals crimson-lake; lip crimson, changing to pink, its middle segment olivaceous; odor pungent), *Fernald, Wiegand & Bartram*, no. 5214; tundra at head of Mary Ann Lake, July 12, 1911 (flowers creamy white, delicately fragrant), *Fernald, Wiegand & Bartram*, no. 5215; peaty barrens among the gneiss hills back of Port aux Basques, July 21, 1924 (flowers greenish-white, with delicious fragrance like that of *Convallaria*), *Fernald, Long & Dunbar*, no. 26,540 (type in Gray Herb.).

The Newfoundland plant has been distributed sometimes as *H. lacera*, sometimes as *H. Andrewsii* White. The latter identification was made through the fact that in color the flowers are often a blend or a mixture of the colors of *H. lacera* and *H. psycodes* of which *H. Andrewsii* is a hybrid, and from the fact that in its cutting the lip of the Newfoundland plant closely simulates that of the latter plant. In Newfoundland typical *H. lacera* is quite unknown and *H. psycodes* is a plant of the rich aluvium of streams or of calcareous meadows, *H. lacera*, var. *terrae-novae* being a characteristic plant of the acid tundra and barrens, there often associated with *H. blephariglottis*.

The contrasts between the Newfoundland variety and typical *H. lacera* of more southern regions are indicated below.

H. lacera (typical): 0.2–8 dm. high, with 4–9 leaves: raceme during anthesis 0.5–3 dm. long: flowers smoky- or greenish-yellow, rarely whitish: lip 1–1.5 cm. long; its 3 lobes dissected into long capillary segments.

Var. TERRAE-NOVAE: 1.3–4.5 dm. high, with 2–4 (very rarely –6) leaves: raceme during anthesis only 3–10 cm. long: flowers variously colored, from cream-white to crimson: lip 7–10 mm. long; its lobes much less deeply dissected.

Some material from Cape Breton is transitional and it is possible that such specimens have given rise to the report from Cape Breton of *Habenaria leucophaea* (Nutt.) Gray.

GRAY HERBARIUM.

POLYGONUM HYDROPIPEROIDES AND P. OPELOUSANUM

E. E. STANFORD.

(*Continued from page 17.*)

The present paper proposes under *P. hydropiperoides* four new varieties, one apparently rather widespread throughout Florida, one found in southern California, and two others, represented by a single specimen each, from Sanibel Island, Florida, and from Oklahoma. The latter is stated by the collector's label to be "common"; as to the one from Sanibel Island no such information is available, but it appears to be fully fertile and to possess normal pollen. A number of specimens of variant material have been withheld from publication on account of the suspicion of hybridism engendered by an unusually large proportion of defective pollen, apparent infertility of achenes, too large a proportion of open-type flowers and apparent blending with other species. It is highly improbable that varieties recognized in this paper exhaust the list of admissible geographic varieties. Among possible fields for future geographic research, the southern seaboard states below Virginia and those of the lower Mississippi basin, which are not particularly well represented in the material at hand, suggest attractive possibilities. The species *P. hydropiperoides* would seem to be of unusual interest to students of variation.

The name *Polygonum opelousanum*, without description, was published by Riddell in the New Orleans Medical and Surgical Journal in 1852, and validated as a name by description by Small in 1892. A specimen from Riddell, with a manuscript description which appears never to have been published, is in the Gray Herbarium. Small, in publishing the species, stated: "The species here proposed is most closely related to *P. hydropiperoides*, from which

it differs by its smaller size, more slender habit, and the conspicuously setose bracts [ocreolae].”[1]

In the 7th edition of Gray's Manual, *P. opelousanum* was treated as synonymous with *P. hydropiperoides*, and in 1911 Stone treated it as *P. hydropiperoides opelousanum*.[2] The similarities between *P. opelousanum* and the variable *P. hydropiperoides* are indeed considerable, and there is room for divergence of view as to the systematic rank of the former. Besides the differences mentioned by Small, the plant appears to become an annual in its northward range; the panicles are shorter and more closely flowered, with the flowers and fruits borne on somewhat divergent pedicels, and, in particular, the calyx is little accrescent in fruit, becoming somewhat rhomboid in aspect, closely appressed to the achene, which is usually somewhat shorter in proportion than is that of *P. hydropiperoides*. The apex of the achene is usually slightly exserted, while that of *P. hydropiperoides* is typically included within the rather elongate calyx. For these reasons the present writer is inclined to rank *P. opelousanum* as a species rather than as a variant of *P. hydropiperoides*, recognizing, of course, a close affinity between the two plants.

The calyx of both *P. hydropiperoides* and *P. opelousanum* is usually described as non-glandular, and under the scrutiny of the usual hand-lens no glands are apparent. A compound microscope reveals, especially toward the base of the calyx, small and rather rudimentary glands within the tissues, which resemble, on a much less elaborate scale, the glands of *P. punctatum*. A variant of *P. opelousanum*, described in this paper from certain localities in Massachusetts and Rhode Island, presents a greenish calyx with plainly evident glands. It is in some respects a form intermediate between *P. opelousanum* and *P. punctatum*.

Key to the Varieties of Polygonum hydropiperoides and P. opelousanum.

Plants perennial (some annual in their northward range): stems upright or decumbent below, glabrous or minutely strigose, never with glandular hairs; leaves mostly lanceolate to lance-linear: ocreae strigose and ciliate: panicles erect: flowers mostly purplish, less commonly whitish or greenish: achenes shining and save in two varieties trigonous, in these both trigonous and lenticular.

[1] Small, Bull. Torr. Bot. Cl. xix. 354 (1892).

[2] Stone, Pl. So. N. J. 422 (1911).

a. Fruiting calyx elongate-ovoid, mostly completely investing the achene *b.*
b. Achenes all trigonous *c.*
c. Leaves lanceolate *d.*
d. Leaves mostly 10–15 cm. long *e.*
e. Panicles slender; fascicles not crowded: peduncles mostly simple *f.*
f. Margins of ocreolae bristly-ciliate *g.*
g. Marginal bristles mostly less than 1 mm. long: pedicels not strongly exserted.
Stem not strigose.....1. *P. hydropiperoides.*
Stem minutely strigose
1a. *P. hydropiperoides*, forma *strigosum.*
g. Marginal bristles mostly more than 1 mm. long: pedicels strongly exserted
1f. *P. hydropiperoides*, var. *Bushianum.*
f. Margins of ocreolae mostly naked and membranous.....1b. *P. hydropiperoides*, var. *psilostachyum.*
e. Panicles rather dense; fascicles crowded: peduncles digitately branched..1c. *P. hydropiperoides*, var. *digitatum.*
d. Leaves rarely more than 5–6 cm. long
1d. *P. hydropiperoides*, var. *macerum.*
c. Leaves ovate or elliptic..1e. *P. hydropiperoides*, var. *sanibelense.*
b. Achenes both lenticular and trigonous
h. Leaves herbaceous, strigose but not harsh
1h. *P. hydropiperoides*, var. *persicarioides.*
h. Leaves subcoriaceous, densely and harshly strigose, especially on the midrib and margin
1g. *P. hydropiperoides*, var. *asperifolium.*
a. Fruiting calyx rhomboid; apex of achene exserted; leaves narrow-lanceolate
i. Calyx not evidently glandular, mostly purplish or whitish
2. *P. opelousanum.*
i. Calyx glandular, greenish.....2a. *P. opelousanum*, var. *adenocalyx.*

1. POLYGONUM HYDROPIPEROIDES Michx. Fl. Bor.-Am. i. 239 (1803). Perennial: stem 3–12 dm. high, slender, upright or more or less decumbent or rooting at the nodes of the woody base, glabrous or barely strigillose, slightly glaucous, greenish or frequently reddened: nodes slightly swollen: internodes 3–4 cm. long: leaves lanceolate, the upper often falcate, 1–1.5 cm. wide, 7–15 cm. long, herbaceous, above usually glabrous, with minute appressed bristles on the midvein or minutely scabrous with appressed hairs, below paler and faintly roughened with internal glands, long-cuneate at base, attenuate to an acute or sometimes abruptly blunt apex, entire, with minute appressed bristles: ocreae 1–1.5 cm. long, scarious-membranous, close-cylindric above and becoming inflated at the bases and loose below, truncate, appressed strigose; margin with bristles 2–4 mm. long: inflorescence erect: the panicles 3–6 cm. long, sometimes geminate; fascicles few-flowered and not crowded: peduncles slender, glabrous or with scattering minute appressed bristles: ocreolae 3 mm. long, oblique, obliquely truncate, greenish or often purplish, glabrous below or rarely with minute appressed bristles; the margin fringed with rather stiff bristles 0.5–1 mm. long: pedicels 2.5–3.5 mm. long,

somewhat exserted: flowers perfect, or with either set of essential organs more or less reduced and in extreme types becoming non-functional; the staminate type of flowers opening widely and falling without noticeable accrescence of calyx or fertilization; the pistillate type usually fertilized cleistogamously before opening except when the stamens produce no functional pollen; fertilized flowers with accrescent calyx inclosing the fruit: calyx 1.7–2.2 mm. wide, 2.5–3 mm. long, smaller in sterile flowers, purplish or pinkish, sometimes greenish below, not evidently glandular, 5-parted to below the middle, the lobes rounded; in fruit accrescent, closed, elongate-ovoid, usually entirely enclosing the fruit: stamens 8, included: filaments in the staminate type 1.5–2 mm. long, the anthers well developed and full of pollen; in pistillate types filaments shorter and the anthers reduced in various degrees, sometimes with complete absence of pollen: style 1 mm. long, 3-cleft nearly to the base; stigmas capitate; style-branches recurved in fruit, rarely slightly exserted (style rarely 4-cleft through division of one of the usual segments, with the production of a 4-angled achene): achene 2 mm. wide, 2.5–3 mm. long, trigonous, rounded at base, usually much concaved on the sides, sharp-angled, brown to nearly black, shining, included or the style-branches slightly exserted.—*P. hydropiperoides* Meisner in Mart. Fl. Bras. v. pt. 1: 16 (1855) and in DC. Prodr. xiv. 103 (1856); Gray, Man. 387 (1848); Darlington, Fl. Cestr. ed. 3: 247 (1853); Chapman, Fl. S. States, 389 (1860); Small, Monog, N. A. Polyg. 80 (1895); not of Pursh, Fl. Amer. Sept. 270 (1814). *P. mite* Persoon, Syn. Pl. i. 440 (1805); Pursh, Fl. Am. Sept. i. 270 (1814); Elliott, Sketch. i. 456 (1817); Eaton, Man. ed. 2: 371 (1818); Sprengel, Syst. ii. 253 (1825); Meisner, Monog. Gen. Polyg. Prodr. 75 (1826); Darby, Man. Bot. So. States 298 (1841); not Schrank, Bayr. Fl. i. 668 (1789). *P. barbatum*, Barton, Comp. Fl. Phila. i. 188 (1818); not L. Sp. Pl. 362 (1753). *Persicaria hydropiperoides* Small. Fl. Se. U. S. 378 (1903); Britton & Brown, Ill. Fl. ed. 2, i. 669 (1913).—Swamps, wet sand, peat, and margins of bodies of water, Nova Scotia to southern Quebec and Ontario, south to Florida and Texas. Brazil acc. to Meisner. Reported from a considerably wider range on this continent, but material seen outside these limits not typical. The following specimens selected from a large collection are referred here. QUEBEC: Lac à la Truite, Megantic Co., *Victorin*, no. 11,287. NOVA SCOTIA: wet peat bordering Boot Lake, Annapolis Co., *Fernald & Long*, no. 23,811; rocky swale bordering Dominick Lake east of Springhaven, Yarmouth Co., *Fernald & Long*, no. 23,810; peaty and cobbly beach of large lake north of Saller Lake, Kemptville, Yarmouth Co., *Fernald & Linder*, no. 21,092; wet peaty and sandy margin of Jones Lake, Roseway River, *Fernald & Long*, no. 23,808. MAINE: shallow water, Orono, Sept. 8, 1890, *Fernald*. NEW HAMPSHIRE: shallow water, Contoocook River, East Jaffrey, *Robinson*, no. 569. VERMONT: West Rutland, Sept. 19, 1897, *W. W. Eggleston*. MASSACHU-

setts: Essex Co. (from Herb. *Oakes.*); pond, East Nantucket, July 14, 1884, *J. R. Churchill.* Rhode Island: West Providence, July, 1844, *Geo. Thurber;* peaty margins of small ponds between Pilot Hill and South East Point, Block Island, *Fernald et al,* no. 9142. Connecticut: Hartford, Aug. 20, 1900, *A. W. Driggs.* New York: peaty margins of Black Creek, Alexandria, Jefferson Co., *Fernald et al,* no. 14,272; edge of Tioughnioga R., Cortland, *E. J. Palmer,* no. 416. District of Columbia: river flats, Sept., 1896, *E. S. Steele.* West Virginia: Tygart Valley river above Huttonsville, Randolph Co., *Greenman,* no. 355. Virginia: Franklin, Southhampton Co., *Heller,* no. 1151; sphagnum swamp southeast of Ewell, *Grimes,* no. 3902. Florida: around ponds, Myers, Lee Co., *Hitchcock,* no. 305: low wet places, Duval Co., *Curtiss,* no. 2402. Indiana: bog, Gibson, *Lansing,* no. 2827; ditch, Roby, *Lansing,* no. 2673. Kentucky: Clear Creek, Bell Co., *Kearney,* no. 410. Illinois: Swan Lake, Calhoun Co., *Metcalf,* no. 1099. Texas: Sept., 1870, *Lindheimer,* no. 1116.

1*a*. Forma **strigosum** (Small), comb. nov. Stem sparingly strigose; leaves and ocreolae also more strigose than in the type: foliage variable, often shorter in proportion than in the type: flowers white or roseate.—*P. hydropiperoides* var. *strigosum* Small, Bull. Torr. Bot. Cl. xix. 355 (1892); Robinson & Fernald in Gray Man. ed. 7: 362 (1907).—*P. hydropiperoides Macouni* Small, Monog. N. A. Polyg. 81 (1895); Britton & Brown, Ill. Fl. i. 560 (1896).—Apparently of no very definite range. The following show the character. Quebec: wet places, Gatineau River, Aug. 23, 1884, *J. Macoun.* New Hampshire: West Epping, Sept., 1889, *A. A. Eaton.* Vermont: Proctor, *Eggleston,* no. 1556. Massachusetts: Nantucket, Aug., 1886, *B. Woodbridge.* Pennsylvania: Long Pond, *Heller & Hallbach,* no. 662.

1*b*. Var. psilostachyum St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 71 (1921). Leaves lanceolate, 0.8 cm. wide, 4–8 cm. long, glabrescent or glabrous, nearly eciliate: ocreolae glabrous, nearly or quite eciliate rather more scarious and widely flaring than in the type.—Appearing a well-marked variety, with pollen 25–50% defective. Type from Nova Scotia cited in original article. The following agree in habit and leaf-outline, but have ciliate ocreolae and leaves with normal margin and surface characters. Oregon: University Park, Multnomah Co., *Sheldon,* no. 11,306 (as *P. punctatum*); marshes about Portland, *Henderson,* no. 846. Washington: low bottom lands of the Columbia, W. Klickitat Co., *Suksdorf,* no. 668.

1*c*. Var. digitatum Fernald, Rhodora xxiii. 260 (1921). Leaves linear-lanceolate, long-attenuate, 1–1.5 cm. wide and 13–20 cm. long: inflorescence digitately branched: the fascicles more crowded than in the type: flowers larger and more widely opening.—Types cited in original article. Known only from Nova Scotia.

1*d*. Var. **macerum**, var. nov., gracillimum 5–6 dm. altum; foliis

lanceolatis 1 cm. latis 5–6 cm. longis: inflorescentiis sparsis plerumque erectis; calycibus purpurascentibus fructiferis longe rhomboideis achenio arcte adpressis.—Wet lands, Florida. The following is chosen as the type. FLORIDA: in water-edge in a swamp near St. Petersburg, *Mrs. Chas. C. Deam*, no. 2,987 (as *Persicaria hydropiperoides*) TYPE in Gray Herb. These also are characteristic: near Port Orange, *Mrs. Chas. C. Deam*, no. 1684; vicinity of Eustis, Lake Co., *Nash*, no. 1087; swamp, Brevard Co., Okeechobee region, *Fredholm*, no. 5891.

1*e*. Var. **sanibelense**, var. nov., caulibus crassis internodiis 1–2.5 cm. longis; foliis ovato-lanceolatis vel ellipticis obtusis basi rotundatis 2 cm. latis 6 cm. longis glabris margine venisque exceptis; ocreolis breviter turbinatis coarctatis imbricatis infra glabris marginibus ciliatis ciliis divergentibus.—FLORIDA: Sanibel Island, May 17, 1901, *S. M. Tracy*, no. 7547, TYPE in Gray Herb.

1*f*. Var. **Bushianum**, var. nov., foliis lanceolatis; ocreis valde strigosis ciliis vaginas subaequantibus; ochreolis arctis supra turbinatis ciliis 1–1.5 mm. longis; pedicellis 3–3.5 mm. longis valde exsertis: calyce fructifero rhomboideo achenio arcte adpresso.—OKLAHOMA: Sapulpa, Sept. 25, 1895, *Bush*, no. 509, TYPE in Gray Herb. Distributed as *Polygonum* sp. "Common."

1*g*. Var. **asperifolium**, var. nov., caulibus crassis 0.5–0.9 m. altis: foliis coriaceis strigoso-scabris lanceolato-attenuatis; inflorescentiis subdigitatis; paniculis subdensis; pedunculis plerumque strigosis; acheniis lenticularibus vel trigonis.—CALIFORNIA: East Los Angeles, 1904, *J. C. Nevin*, no. 2, TYPE in Gray Herb. The following are also characteristic: Wilson's Lake, near Pasadena, 1904, *Nevin*, no. 1; vicinity of San Bernardino, alt. 1000–1500 feet, *Parish*, no. 3797.

1*h*. Var. **persicarioides** (HBK.), comb. nov. Leaves lanceolate, minutely strigose or appressed-bristly: ocreolae often glandular-roughened, slenderly ciliate; the lower often strigose below: calyx sometimes 4-cleft (usually 5-cleft): stamens usually 6–7: achene lenticular or trigonous.—*P. persicarioides* HBK., Nov. Gen. et Sp. ii. 179 (1818): Cham. & Schl. Linnaea, iii. 44 (1828); Meisner in Mart. Fl. Bras. v. pt. 1: 18 (1855) and in DC. Prodr. xiv. 117 (1856); Small, Monog. N. A. Polyg. 68 (1895). *Persicaria persicarioides* (HBK.) Small, Fl. Se. U. S. 378 (1903).—Nebraska, New Mexico (according to Small), Texas, Mexico, Central and South America, mostly in wet places. The following are typical. TEXAS: growing in small pond, near Trinity River, Madison Co., *R. A. Dixon*, no. 423; *Berlandier*, no. 912 in Hb. Mo. Bot. Gard. MEXICO: Hacienda San Miguel, near Batopilas, Chihuahua, *E. Palmer*, no. 137; Hacienda San Bartolo, Tecoman, Colima, Aug. 1, 1905, *P. Goldsmith* (as *P. hydropiperoides*); San José del Cabo, *A. W. Anthony*, no. 340.

2. POLYGONUM OPELOUSANUM Riddell in Small, Bull. Torr. Bot. Club, xix. 354 (1892). Perennial, or annual northward: stem 3–9 dm. high, slender, usually erect and freely branching from the woody

base, glabrous, green; nodes somewhat swollen; internodes 3–6 cm. long: leaves narrow-lanceolate or somewhat falcate above, 0.5–1 cm. wide, 3–12 cm. long, glabrous or with minute appressed bristles especially on the veins, glandular-roughened below, attenuate at both ends; margin entire, slightly revolute, with minute appressed bristles: ocreae 1–1.2 cm. long, cylindrical, brown, scarious-membranous, slightly inflated at the base, loose below and at the branching nodes, strigose; the margin with bristles 2–4 mm. long: inflorescence erect or slightly drooping on very slender glabrous peduncles; panicles 1.5–4 cm. long, single, geminate or rarely digitate; fascicles few-flowered, rather close: ocreolae 1.5–2 mm. long, narrow-funnelform, oblique, obliquely truncate, glabrous below and usually green, in the fruiting stage scarcely overlapping, fringed with spreading bristles 1–2 mm. long: pedicels 1–2.5 mm. long, slightly surpassing the ocreolae: flowers perfect, or with either stamens or style reduced and non-functional as in *P. hydropiperoides:* calyx 1.5–2 mm. long, white or pinkish, 5-parted to below the middle, with rounded not evidently glandular lobes, scarcely accrescent in fruit; then closely appressed to the achene: stamens 8, included: style 1 mm. long, 3-cleft to near the base: its branches in fruit mostly reflexed: achenes 1.2–2 mm. wide, 1.5–2 mm. long, sharply trigonous, rounded or sometimes somewhat acute at base, concaved on the sides, with the recurved stigmas usually exserted.—*P. opelousanum* Riddell, New Orleans Med. Surg. Jour. viii. 760 (1852), acc. to Small; Small, l. c. (1892) and Monog. N. A. Polyg. 78 (1895). *P. hydropiperoides opelousanum* (Small) W. Stone, Pl. So. N. J. 422 (1911). *Persicaria opelousana* (Riddell) Small, Fl. Se. U. S. 378 (1903).—Massachusetts, New Jersey, Virginia to Louisiana and Mexico, inland along the Mississippi basin to Missouri and Illinois, in wet sand or peat. The following are typical. Massachusetts: Jamaica Plain, *C. E. Faxon.* Florida: ditch, Duval Co., *Fredholm*, no. 5273; Braidentown, *Tracy*, no. 7133. Illinois: Fox Bottom near mud bridge, Aug. 26, 1919, *R. Ridgway*, no. 784. Missouri: swampy places, Newton Co., uncommon, *Bush*, no. 321 (as *P. acre* var. *leptostachyum);* Pleasant Grove, *Bush*, no. 278. Mississippi: Biloxi, Harrison Co., *Pollard*, no. 1046. Louisiana: *Riddell*, no. 1431 (accompanied by a MS. description). Texas: near Texarkana, Bowie Co., *Heller*, no. 4149. Mexico: Orizaba, *Botteri*, no. 1163; near Jalapa, Vera Cruz, *Pringle*, no. 8143. Many of the preceding were distributed as *P. hydropiperoides.*

2*a*. Var. **adenocalyx**, var. nov. calycibus viridibus glandulosis.

Calyx resembling that of *P. punctatum*, but the glands whitish and less evident and plentiful.—Massachusetts, Rhode Island and Connecticut. Massachusetts: wet peaty shores and hollows, Half-Way Pond, Barnstable, Sept. 4, 1918, *Fernald & Long*, no. 16,766 (as *P. hydropiperoides* var. *opelousanum*), type in Gray Herb.; bare wet sand by Cole's Pond, East Dennis, Barnstable Co.,

Fernald & Long, no. 18,403; wet sandy beach of Long Pond, Brewster, *Fernald & Long*, no. 16,763; Sharon, *S. F. Poole*, no. 292 (as *P. hydropiperoides*); brook near Church St., Winchester, Aug. 15, 1853, *Wm. Boott* (as *P. acre*). Rhode Island: peaty margins of small ponds between Pilot Hill and South East Point, Block Island, *Fernald et al.*, no. 9413; peaty margin of pond near Clay Head, Block Island, *Fernald et al*, no. 9415 (as *P. hydropiperoides*). Connecticut: wet roadside, Stratford, Sept. 9, 1895, *E. H. Eames* (as *P. acre*, with which it is mixed).

Western Reserve University.

SOLIDAGO RIGIDA L.

Kenneth K. Mackenzie.

In the Linnaean herbarium named *Solidago rigida* is a specimen of the species so currently treated in our manuals (Gray Proc. Am. Acad. **17:** 179. 1882). Unfortunately, however, the Linnaean species is entirely based upon citations from older authors. No word of original description is given, and in consequence the specimen in the herbarium cannot be considered in determining the proper application of the name, although it was in the Linnaean herbarium when the species was published (Jackson Proc. Linn. Soc. (1912) Appendix 139).

The original description is short and reads as follows:

Solidago rigida L.

"10. Solidago foliis caulinis ovatis scabris, ramis alternis fastigiatis, corymbis terminalibus. *Hort. cliff.* 410. *Roy. lugdb.* 162.

"Virga aurea novae angliae, lato rigidoque folio. *Herm. par.* 243 *t.* 243.

"*Habitat in* Pensylvania."

Linnaeus Sp. Pl. 880. 1753.

The first notice Linnaeus gave of this plant was in 1737, when in Hortus Cliffortianus he wrote:

"6. Solidago foliis caulinis ovatis, ramis alternis fastigiatis, corymbis terminatricibus.

"Virga aurea novae angliae, lato rigidoque folio. *Herm. parad.* 243. *t.* 243. *Tournef. inst.* 485. *Vaill. act.* 1720, *p.* 397 (should be 307).

"Doria americana, lato rigidoque folio. *Boerh lugdb.* 1. *p.* 98.

"*Crescit in* nova York, *Americae septentrionalis*, Pensylvaniae."

Linnaeus Hort. Cliff. 410. 1737.

In 1740 in Royen's work (largely the work of Linnaeus) he wrote:

"5. Solidago foliis caulinis ovatis, ramis alternis fastigiatis, corymbis terminatricibus. *Linn. h. Cliff.* 410.

"Doria americana, lato rigido folio. *Boerh.* lugdb. 1. p. 98.

"Virga aurea novae angliae, lato rigidoque folio. *Herm. par.* 243 t. 243."

Royen Fl. Leyd. Prodr. 162. 1740.

The citations to Tournefort, Vaillant and Boerhaave referred to, are as follows:

"Virga aurea novae Angliae lato rigidoque folio Par. Bat. Virga aurea ex nova York, foliis symphiti majoris, hirsutis Schol. Bot."

Tournefort Inst. (Ed. 3) 485. 1719.

"12. Virga aurea novae angliae, lato, rigido folio. Par. Bat. 243. & I. R. Herb. 485."

Vaillant in Mem. Roy. Acad. Sc. 307. 1720.

"5. Doria; Americana: lato, rigido folio. *Virga aurea, novae Angliae, lato, rigidoque folia* Par. *Bat. M. H. 3. 125. Virga aurea, ex Nova York, foliis symphyti majoris*, hirsutis. Sc. Bot. Par. t. H."

Boerhaave Ind. alter Pl. Lugd.-Batav. 98. 1720.

It will be noted that all of these references go back to the plate and description of Hermann Paradisus Batavus 243, pl. 243. 1698. This is a fine piece of work and the plate referred to is an excellent one. It is, however, not at all the plant currently known as *Solidago rigida*, but it is *Solidago patula* Muhl. The description is long and carefully drawn, but it will be here sufficient to quote the description of the leaves:

"ex qua prodeunt *folia* plurima, pedalia, palmum lata, in mucronem desinentia, subviridia, tactu aspera, rigida, pluribus nervis inscripta, subinde in margine denticellis incisa, pediculis dodrantalibus insidentia. *Caules* gerit multiplices, firmos, rotundos, striatos, crassos, quos ambiunt *folia* caeteris minora magisque acuminata, basi caulem quasi amplectentia."

The only scientists who seem to have consulted this plate at all were Torrey & Gray (Fl. N. Am. 2^2: 209. 1842) who characterized it as "poor" under the plant treated by them as *Solidago rigida* L.

It is interesting to note that Torrey & Gray (l.c. 213) in describing *Solidago patula* Muhl. say, "This species is readily distinguished by the shagreen-like roughness of the upper surface of the ample some-

what coriaceous leaves" while the older author Hermann writing in 1698 described them as "tactu aspera, rigida."

While the change required may be distasteful it is quite evident that we must give to the plant which has been called *Solidago patula* Muhl. the name *Solidago rigida* L.

MAPLEWOOD, NEW JERSEY.

POGONIA AFFINIS IN MAINE.

EDWIN H. EAMES.

SPECIMENS of *Pogonia affinis* Aust. have been distributed with the following data: "Norway, Oxford County, Maine, 20 Aug. 1923. Dr. E. H. Eames and Dr. C. C. Godfrey."

This appears to be the first collection in the State and is about 70 miles northeast of the only station recorded[1] from New Hampshire, near Holderness, where three specimens were found. It lacks a few miles of reaching the same latitude as the most northerly station recorded, at Burlington, Vermont, where apparently one specimen was found.[2]

This Maine colony was so extraordinary in some ways as to merit detailed record. About 35 plants were found within an interswamp area of approximately half an acre of fairly well drained, partly very open woodland of beech and red maple, merging upon one side into a scattering growth of Arbor Vitae—common in the general locality—which at one point, within a few meters of the nearest *Pogonia*, became a swamp characteristic of the species, where were many well-fruited specimens of *Microstylis monophyllos* (L.) Lindl.

The area was largely free from underbrush or vegetation of any kind. The soil was sandy loam or in places clay-loam, topped with a moderate but variable layer of leaf-mold and nowhere more than a meter above the adjacent swamps, nearly level and barely moist.

The plants generally were widely scattered but at the highest point, a mound about the base of a tall badly decayed beech trunk well perforated by woodpeckers, was a combination offering unusually favorable organic soil conditions as shown in its support of a very interesting growth of the Pogonias—a cluster of eleven stems within

[1] RHODORA, xix: 235. 1917.
[2] Torreya, ii: 143. 1902.

an area no larger than one's palm, with two outlying stems about 18 and 24 cm. distant. All of these were apparently then or originally connected by subsurface roots. Eight of these bore fruit—none mature although the capsules when fresh were of mature size—mostly in pairs, with some woody-fibered remnants of fruiting stems of the preceding year. It may be noted that such old stems, still connected or lying in such position as to show origin, sometimes show but one capsule on a present year's two-capsuled stem and vice-versa. Also a rhizome with three stems may show but one for the preceding year or otherwise, erratically.

The height from roots to leaves, as measured in the herbarium, is 30 and 32 cm. for two fertile and 36 cm. for one sterile stem from the same rhizome. Most of the others were little less.

The leaves measured up to 9.8 × 4.6 cm., usually with much variation in every verticil; the combined peduncle and capsule from 4.1 to 4.8 cm. in length, of which the capsular portion varies from 2.8 to 3.4 cm.

The roots in this clump were numerous, about 70, all rather erratic, rarely branching, and mostly of remarkable length, varying from several to 18 cm. for those with apex complete. This great mass of roots may be accounted for by the special conditions which included much greater depth of organic matter and the fact that many roots penetrated the underlying soil of sandy clay. Generally the roots in this species are without branches but when these do appear they may be very sparingly disposed as strictly lateral, opposite or forked to appear nearly opposite, or apparently dichotomous.

Vegetative reproduction occurs to a very limited extent and originates in nodes formed upon more or less horizontal roots. This process seems to be slower and less successful than in *P. verticillata* and generally is a very inefficient factor in extending a colony. In both species several years elapse between forming nodes and self-perpetuating plants, with more added for the attainment of mature characters.

These nodes vary from 0.3 to 20 cm. from the parent stem—in one case 0.8 (had borne a stem a year or two earlier as shown by shreds of it), 2.4 and 5.2 cm. distant, the last with a close series of roots: another 0.3, 2.5 (bore a stem at least three years earlier), 7.8 and 19 cm. distant with a close knot of roots from the latter.

But united *plants* seem to be rarely collected because of their scarcity, depth in the soil or difficulties of an extraneous nature.

The true rhizome, as here interpreted, from which the annual stems arise, is usually perpendicular or oblique and has yearly accretions of only 0.2 to 0.3 cm. from a bud or buds well formed before the dormant condition and sometimes well before fruit is mature.

The bud, in unusually robust specimens, may become 1.5 cm. long in its season of origin.

The rhizome is rarely 4 cm. long in specimens observed and such may display distinctly several shredded remnants of earlier stems with indications of as many more.

Approximately one-third of the plants in this colony were sterile at the time although some of these may have produced flowers. Sterile plants do occur in about that proportion as noted at flowering time in a colony at Stratford, Connecticut, found by Charles K. Averill in May, 1887. Observations there during a number of years have shown years when no plants appeared and others with varying numbers to about eight, the latter when the colony had been least disturbed.

Two-flowered stems are frequent and rarely two such stems closely associated on the same rhizome, etc.

Most of the data obtained at the Stratford station fairly coincide with the recorded observations of E. J. Grimes in Virginia.[1]

The flowers in their early virile state seem better described as pale green with enough of bloom about the parts to make difficult a color name. The really "yellowish" green described in literature appears only as the flowers age and may become pronounced in their final stage. In Stratford the period of flowering always occurred between mid-May and mid-June, scarcely three weeks in any season. The fruit there matured in October but was scarce.

The bloom covering the plant varies in intensity being more pronounced where exposure to sunlight is greatest. There is something about this color together with the surroundings that about as effectually conceal the plant as anything in its habitat, even when standing alone.

In *P. verticillata* this bloom is much less apparent but there is much of the same color effect and it also is paler in strong light. In this species, while somewhat similar to the other, the root system is greatly extended and usually nearer the surface. At times there is little difficulty in obtaining many meters of a single root, usually showing nodes or branches quite distant, commonly half a meter or so.

[1] Rhodora xxiii: 195–7 and xxiv: 149.

It may readily be observed that the branching of such roots is a prolific source of new stems. Entire colonies, sometimes of great extent, seem to owe their existence to this habit. Upon one old rhizome of a sterile plant there are shreds representing eight stems covering as many years, all within a space of 2 cm., together with about a dozen long roots.

A feature of much import to the field student is the intimate association of both species of *Isotria* with beech trees. This was remarked nearly 40 years ago in the Stratford station for *P. affinis*, where the plants grew only under a beech, also at another station in the same town which yielded a solitary fruiting plant.

Later observations have shown the same environment to be very constant with *P. verticillata*, the few exceptions being, it would seem, more apparent than real, due to disturbed conditions. Hemlock often occurs in these areas and, with beech, is generally noted in the literature as a component of the woodland, but the former seems to be merely incidental.

Some very impressive instances might be cited, especially a wide-spreading very low-branched beech bordering a grassy cartpath in a woodland made up chiefly of chestnut. The ground area immediately below these branches was actually a solid mosaic of *P. verticillata* foliage which stopped almost abruptly at its outer borders—not another specimen anywhere in the locality. Commonly, however, conditions are such that the humus nearby contains decomposed beech leaves in sufficient amount to meet the needs, especially in colonies long established. With the beech habitat in mind it has always been easy to find these Pogonias if they were to be found at all and it was only because of this that *P. affinis* was found in Maine.

There is no other clue, as both species occur in dry as well as wet habitats, and *P. verticillata* as well on hills as in low swampy places. The only accessory desiderata seem to be comparative or even absolute freedom from underbrush and even of other herbaceous vegetation, together with comparatively light shade. *Medeola* and *Arisaema triphyllum* are associates in certain instances and both make it much more difficult to find any Pogonias.

BRIDGEPORT, CONNECTICUT.

A NEW MAGNOLIA FROM WEST FLORIDA.

C. A. Weatherby

Magnolia Ashei, n. sp., *M. macrophyllae* valde affinis, differt tamen costis subtus plerumque subappresse pubescentibus, floribus minoribus, viventibus diametro 20–31 cm. (fide Ashe), petalis plerumque acutis vel acutiusculis, exterioribus 12–14.5 cm. longis 5–6.6 cm. latis, interioribus 10.5–13 cm. longis 3–5.5 cm. latis, carpellorum capitulis ad anthesin plerumque anguste ovoideis 2.4–2.7 cm. longis, stylis plerumque rectis, fructibus ovoideo-cylindraceis, 5–11 cm. longis diametro 3.5–5 cm., folliculorum valvarum appendicibus siccatis 1–2 mm. latis vel, ut videtur, paene obsoletis, intus sparse pubescentibus, seminibus 9–10 mm. longis.

Closely related to *M. macrophylla*, from which it differs in the usually subappressed pubescence of the midribs of the leaves beneath; the smaller flowers, according to Ashe 20–31 cm. in diameter when fresh; the usually acute or acutish petals, the outer 12–14.5 cm. long, 5–6.6 cm. wide, the inner 10.5–13 cm. long, 3–5.6 cm. wide; the head of carpels, usually narrowly ovoid and 2.4–2.7 cm. long at flowering time; the usually straight styles; the ovoid-cylindric fruit, 5–11 cm. long, 3.5–5 cm. in diameter; the narrow appendages of the follicle-valves, in dried material 1–2 mm. wide or apparently almost obsolete, sparsely pubescent within; and the smaller seeds, 9–10 mm. long.—In deep sandy soil near streams, associated with laurel oak, *Ilex opaca*, *Liquidambar*, *Cercis* and *Illicium*. Florida, Okaloosa County: tree 25 ft. high, or shrubby, Rogue Creek, April 26 and June 6, 1925, *Ashe*, (type in herb. Ashe), two sheets, same locality and dates in Herb. Gray, and others from same locality (coll. *E. R. McKee* and *Ashe*) in herb. Ashe; head of Rocky Creek, April 26 and Oct. 24, 1923, *Ashe*, and May 3, 1925, *G. B. Anchora*, all in herb. Ashe.

In *M. macrophylla* the pubescence of the under surface of the leaves, though variable, tends to be denser than in *M. Ashei*. That of the mid-rib beneath, also variable as to the length of the hairs, is spreading, and when the hairs are long often matted and lanate. The flowers average distinctly larger, according to Ashe's measurements of fresh material 33–43.5 cm. in diameter when fully expanded. The outer petals are, according to Ashe, 20–23 cm. when fresh, in the Gray Herbarium specimens 14–18 cm. long, 6.5–13 cm. wide, and with a broadly obtuse apex. The head of carpels at anthesis is broadly ovoid. The styles are commonly spreading or recurved near the apex. The head of fruit is broadly ovoid to subglobose, 6–11 cm. long, 4.5–9 cm. in diameter. The seeds are rarely as little as 10, usually 11–14 mm. long.

The follicles of the two species show, so far as can be made out from dried material, a structure not fully accounted for in current descriptions. The valves appear to be produced, for their whole length, into a pubescent appendage which extends out beyond the suture along which dehiscence takes place. In the fully mature and open follicle, these appendages appear as pubescent margins along the outer edges of the gaping valves, the cavity containing the seeds being quite glabrous within.

In *M. macrophylla* the appendages are thick and fleshy, and the apparent margin formed by them is 4–5 mm. wide: in *M. Ashei* they are much thinner and less developed, and the margin is 1–2 mm. wide, or, in the dried fruit, almost shrunken away.

According to Ashe's notes, *M. macrophylla* grows in drier situations, often in open woods well away from streams, with red oak and white hickory.

It will be noted that the differential characters of *M. Ashei* are for the most part of a rather comparative nature and, with the exception of the shape of the fruit and the structure of the follicle, not wholly constant in Mr. Ashe's fine series of specimens. Taken together, however, they constitute a fairly impressive body of evidence, which seems to justify the addition of *M. Ashei* to the list of local species of *Magnolia*, such as *M. pyromidata* and *M. cordata*.

GRAY HERBARIUM.

KATE FURBISH, BOTANIST.—An appreciative sketch of Kate Furbish, who is now in her ninety-second year, has been written by Louise H. Coburn[1] and will be wanted by all who know Miss Furbish or who have known of her tenacity to a life-long purpose. The appreciation is gracefully conferred and the pamphlet is notable as containing three features which in her earlier days Miss Furbish was very loth to make accessible, a statement of her age, an excellent photograph and several very successful photographic reproductions of her paintings of Maine plants. The author is Miss Louise H. Coburn, Skowhegan, Maine.—M. L. F.

Vol. 27, no. 324, including pages 201 to 224 and title page of volume 27, was issued 17 February, 1926.

Vol. 28, no. 325, including pages 1–20, was issued 17 February, 1926.

[1] Kate Furbish, Botanist.--An Appreciation by Louise H. Coburn. 1925.

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FURTHER NOTES ON CHANGES IN A SALT MARSH DURING RECLAMATION

Walter Deane

Ten years have passed since I published a paper on floral changes in a salt marsh during reclamation.[1] At that time I had opportunity for a long investigation. Since then I have visited the area at intervals and recorded my observations.

The locality is on the banks of Charles River in Cambridge, Massachusetts, a few miles above its mouth, and was formerly subjected to tidal action, but, since the building of a dam near the mouth of the river in 1908, the water has been practically fresh, and there has been no flooding. The character of the marsh is practically the same as it was in 1915. A rough road, used rarely by horseback riders, runs along the west border. The marsh will soon be made over into a city park and its entire character will be changed for the first time. It will have no interest for the botanist, and this is my apology for adding a little to my former paper.

As I have wandered over the marsh at intervals, I have noticed the disappearance of almost all traces of the saline plants that at one time were abundant, while the upland plants increase and take their places. I can now record only three of the saline species that were still lingering in 1915. *Atriplex patula* L., var. *hastata* (L.) Gray, which was scattered over the marsh in 1915, seems to have been reduced to a single patch in the center of the marsh, where I saw it on October 23, 1924. *Suaeda linearis* (Ell.) Moq. was still lingering on the west side, where a few patches were seen on October 16, 1923. *Solidago sempervirens* L. still persists here and there over the marsh, as I saw scattered plants on September 22, 1923.

I have noticed but one salt marsh species not recorded before. On

[1] Rhodora, Vol. 17, no. 203, November, 1915, 205–222.

September 22, 1923, I found a single plant of *Suaeda maritima* (L.) Dumont, fleshy and prostrate, with up-curving branches. Prof. M. L. Fernald tells me that this is distorted, but must be of this species. On October 23, 1924, I found near the same spot a cluster of the same species. The plants were distorted, but not prostrate.

As is quite natural, upland species continue to occupy the area and increase in number. One and the only instance, however, of the appearance of salt in a single locality I have observed recently. My notebook records the following fact. "May 10, 1925. There is an area of land at the north end of the marsh, some 20 or 30 feet long by five or six feet wide, where there are deposits of clear, white salt, very thinly covering the soil. The taste is very strong. The surface of the ground is free from vegetation." The salt soon disappeared and I did not see it again.

I will append a list of the upland species that have invaded the area of the marsh since 1915.

Flora of the Marsh.

Andropogon scoparius Michx., var. *frequens* Hubbard. Abundant on the west side near the roadway, October 16, 1923.

Glyceria obtusa (Muhl.) Trin. Abundant in a ditch in the east center, September 22, 1923.

Bromus tectorum L. A small clump of six specimens on the western side, near the center, June 1, 1924.

Carex canescens L. One clump on the river bank at the eastern extremity, May 27, 1922.

Juncus canadensis J. Gay. Several plants at the northern end, October 23, 1924.

Smilax rotundifolia L. Abundant on the western border, October 16, 1923.

Iris versicolor L. A cluster of a dozen or so leaves on the border of wet ground at the northwestern end, October 23, 1924.

Salix fragilis L. Shrub at the north end on the border, in leaf, October 23, 1924 and May 13, 1925.

Populus nigra L., var. *italica* Du Roi. A single small tree on the west side of the marsh, on October 13, 1918, and a single tree on the river bank, on May 3, 1923.

Populus candicans Ait. A single small tree at the north end, on October 23, 1924.

Myrica carolinensis Mill. Abundant on the west border in good fruit. I collected it there on October 16, 1923.

Alnus incana (L.) Moench. Three shrubs about 15 feet high with leaves and old fruit, on the outer edge of the marsh by the river, May 2, 1922. A portion of the marsh had been recently burned over.

Lepidium apetalum Willd. A single plant on the west border of the marsh, October 13, 1918.

Pyrus Malus L. A very small tree on the northern border of the marsh, May 7, 1922.

Potentilla canadensis L. Northwest corner of the marsh, June 1, 1924.

Rubus idaeus L. Abundant on the border of the marsh on the western side; no fruit. October 16, 1923.

Rubus hispidus L. Running over the grass on the western border, May 30, 1921, May 27, 1922. Two large patches, each some twenty feet in diameter, densely covering the ground on the nothern end of the marsh, October 23, 1924.

Rosa palustris Marsh. (*R. carolina* of Gray's Manual). Abundant in fruit on the west edge of the marsh, October 14 and 16, 1923 (Rydberg, Bull. Torr. Bot. Club xlvii, 50–51, 1920).

Robinia Pseudo-Acacia L. Several small trees at the northern end of the marsh, May 27, 1922 and October 23, 1924.

Callitriche heterophylla L. Stigma longer than the fruit and erect. In one of the old ditches intersecting the marsh, near the southern end, June 1, 1924.

Rhus glabra L. Large shrub, west border of marsh, October 13, 1918; and abundant at the north end, September 23, 1923. Shrubs in leaf only.

Acer saccharinum L. A small tree close to the border of the marsh at the north end, May 13, 1925.

Cephalanthus occidentalis L. A few plants growing in the water close to the shore of the river in a bay at the south end, September 22, 1923.

Lonicera Morrowi Gray. Two or three shrubs very near the edge of the marsh at the northern end, May 8 and 13, 1925.

Lonicera tatarica L. Sandy slope close to the marsh on the west side, May 7, 1921.

Symphoricarpos racemosus Michx., var. *laevigatus* Fernald. A vigor-

ous shrub in full fruit at the northern end of the marsh, October 4, 1922.

Boltonia asteroides (L.) L'Hér. A cluster of plants on the northern edge of the marsh, September 22, 1923.

Aster novae-angliae L. Several plants in the northern portion, October 4, 1922; abundant there, September 22, 1923.

Aster novae-angliae L., var. *roseus* (Desf.) DC. Several plants in the northern portion, October 4, 1922; abundant there, September 22, 1923.

Aster multiflorus Ait. One plant in the center of the marsh, September 22, 1923. Some large plants at the north end, near the margin, October 23, 1924.

Aster puniceus L. A single specimen in the center of the marsh, September 22, 1923.

Arctium minus Bernh. Common in the northwestern portion of the marsh, October 16, 1923.

Total number of species and varieties observed on the marsh since 1915 and not observed before.....39
Plants affecting saline habitats..... 1
Upland plants which have appeared since 1915.....38

As the plants of saline habitats have been reduced almost to zero, it is interesting to note that it has taken a period of 17 years to bring about this change.

The plants enumerated above are in my herbarium. In the verification of some forms I have been assisted by Prof. M. L. Fernald and Mr. C. A. Weatherby, while in the collection of specimens I have been materially aided by Miss L. M. Brown.

Cambridge, Massachusetts.

ZINNIA VS. CRASSINA.

S. F. Blake.

The familiar garden plants popularly known as zinnia had borne the same botanical name unchallenged for a century and a quarter when, in 1891, Otto Kuntze[1] displaced *Zinnia* L. (1759) by *Crassina* Scepin (1758) on the ground of priority. The change was adopted by Porter and Britton (1894) and other writers in America, and for thirty years

[1] Rev. Gen. Pl. **1:** 331. 1891.

the name *Crassina* has been accepted by a considerable proportion of American botanists as the correct designation of the genus. Apparently not one of the botanists who have used this name, from Kuntze on, has ever examined the work in which it appeared. Scepin's doctoral thesis,[1] published at Leyden, appears to be now very rare. It is not at the Gray Herbarium, the New York Botanical Garden, the Missouri Botanical Garden, or the John Crerar Library, nor is it mentioned in the catalogs of the Arnold Arboretum, the C. G. Lloyd Library, the British Museum of Natural History, or the Royal Gardens at Kew. Kuntze himself, although he had access to good botanical libraries and did much original bibliographic work, took up the name only on the strength of the account of *Zinnia* and its synonyms given in Boehmer's edition of Ludwig's "Definitiones Generum Plantarum" (p. 190, 1760). The copy examined in the preparation of this note is in the Surgeon-General's Library at Washington.

To the extreme rarity of Scepin's paper and the consequent inability of botanists to consult it, is due not only the persistence of the name *Crassina* in American botanical literature, but also a curious misconception regarding its origin. In both editions of Britton & Brown's "Illustrated Flora" the genus is said to be named in honor of "Paul Crassus, an Italian botanist of the sixteenth century." This statement is evidently taken from Wittstein's "Etymologisch-botanisches Handwörterbuch," p. 235 (1856), which contains the following paragraph: "Crassina Scop. (Compositae). Nach Paul Crassus; schrieb: De Lolio, Bologna 1591." The source of Wittstein's explanation of the name is not evident,[2] but is surely not Scepin's paper, for in that (p. 22) the genus is said to be named in memory of Stephan Crascheninnikow, Professor of Botany at St. Petersburg, and companion of Gmelin and Steller in their Siberian and Kamchatkan travels. The extremely abbreviated generic name used by Scepin, which has so effectually concealed the identity of the botanist he sought to honor, was adopted, he says, "ne in leges a sedulo promotore Botanices Linnaeo statutas peccarem."

[1] Scepin, Constantinus. Schediasma chemico-medicum inaugurale de acido vegetabili quod cum annotationibus botanicis . . . publico et amico examini sistit Constantinus Scepin e Wiatka Russus. Lugduni Batavorum, apud Gerardum Potuliet, 1758. Title page, pp. [1]–[6] (introduction), 1–44.—The name *Crassina* occurs on p. 22, where its derivation is explained, and on p. 42, where the description begins, continuing to p. 44.

[2] Not only Wittstein, but also De Candolle (Prodromus), Bentham & Hooker, and Durand (Index) wrongly attribute the name to Scopoli, evidently by a confusion between the abbreviations "Scep." and "Scop."

Scepin's name *Crassina* is effectively published under the provisions of the Vienna Rules, but not under those of the Rochester Code. Although the genus is described, no binomial is cited, nor can one be associated until 1759 with either of the two polynomial synonyms given. These are *Rudbeckia foliis oppositis &c.* of Zinn, Cat. Hort. Gotting. 409 (1757), and *Bidens, calyce oblongo, &c.* of Miller, Fig. Pl. **1**: 43. *pl. 64* (1756). Neither of these authors cites any previously published synonym associable with a binomial, and both references were first connected with a binomial name in 1759, when they were cited by Linnaeus (Syst. ed. 10, p. 1221) under *Zinnia peruviana*. The name *Crassina* must consequently be dropped by those who follow the Rochester Code. It would be eligible under the Vienna Rules, but its use is fortunately obviated by the fact that *Zinnia* was made a *nomen conservandum* in 1905.

At the time he adopted the name *Crassina*, Kuntze suggested that *Lepia* Hill might also be an earlier name than *Zinnia*. The first edition of Hill's Exotic Botany, where[1] the name (misquoted *Lejica* by Linnaeus in the second edition of the Species Plantarum, p. 1269. 1763) first appeared, is not in Washington. Mr. Alfred Rehder has examined the copy at the Arnold Arboretum and informs me that *Lepia* appears only as a generic name without reference to any previously published name, and is consequently only a hyponym under the Rochester Code. The preface of Hill's work is dated January 18, 1759, so that it probably appeared earlier than the 10th edition of the Systema Naturae (May–June 1759), in which *Zinnia* was published. Hill used[2] the name *Lepia* again in 1768, with the binomials *Lepia pauciflora* and *L. multiflora*. In the second edition of the Exotic Botany (p. 29, *pl. 29*, 1772) he adopted the name *Zinnia pauciflora*, used by Linnaeus in the second edition of the Species Plantarum, and added a final paragraph to his account of the plant: "Since the publication of the first edition of this work, Linnaeus saw the Plant and nam'd it Zinnia. Perhaps my name was fitter, but uniformity is so much better than strict propriety in this article, that I willingly subscribe to the Linnaean name." The followers of both the Vienna Rules and the Rochester Code can now do the same.

Bureau of Plant Industry, Washington, D. C.

[1] "Exot. Bot. ed. 1. 29. *pl. 29*. 1759."
[2] Hort. Kew. 18. 1768.

FIFTH REPORT OF COMMITTEE ON FLORAL AREAS. PRELIMINARY LISTS OF NEW ENGLAND PLANTS—XXX.

The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found. An asterisk following either sign signifies that the species concerned, though native elsewhere in New England, is certainly known in the state specified only as an escape from cultivation.

	Me.	N. H.	Vt.	Mass.	R. I.	Ct.
TAXACEAE						
Taxus canadensis L.	+	+	+	+	+	+
PINACEAE						
Abies balsamea (L.) Mill.	+	+	+	+	+*	+
" " var. phanerolepis Fernald	+	+	+			
Chamaecyparis thyoides (L.) BSP.	+	+		+	+	+
Juniperus communis L.	+	+		+		+
" " var. depressa Pursh	+	+	+	+	+	+
" horizontalis Moench	+	+	+	+		
" virginiana L.	+	+	+	+	+	+
Larix decidua Mill.				+	—	+
" laricina (Du Roi) Koch	+	+	+	+	+*	+
Picea Abies (L.) Karst.	+		+	+		+
" canadensis (Mill.) BSP.	+	+	+	—	—*	—*
" mariana (Mill.) BSP.	+	+	+	+	+	+
" " f. semiprostrata (Peck) Blake			—			
" rubra (Du Roi) Dietr.	+	+	+	+	+	+
" " f. virgata Rehder				—		
Pinus Banksiana Lamb.	+	+	—	+*		
" resinosa Ait.	+	+	+	+		+
" rigida Mill.	+	+	+	+	+	+
" Strobus L.	+	+	+	+	+	+
" sylvestris L.	+			+	+	+
Thuja occidentalis L.	+	+	+	+	+*	+
Tsuga canadensis (L.) Carr.	+	+	+	+	+	+

Picea mariana, f. *semiprostrata* is an extreme "creeping alpine form . . . eight or ten decimeters long or more, with short crowded branches mostly fascicled toward the erect apex of the stem, and tiny four-

grooved glaucous needles 3–6 mm. long." It is to be expected on other high mountains beside Mt. Mansfield, from which it has been reported by Eggleston (Vt. Agric. Exp. Sta. Bull. 187. 162 (1915)) and Blake (Rhodora, xv. 200 (Nov., 1913)).

Picea rubra, f. *virgata* has the long and slender branches quite destitute of branchlets, paralleling in this respect a form of the Norway spruce ("snake spruce") long known in Europe. It is apparently known only from the original collection near Williamstown, Mass. (*George Walker*).

The European larch (*Larix decidua*) is reported as an escape from cultivation at eight localities in southeastern Massachusetts, Rhode Island, and in Connecticut. About the middle of the last century the Norway spruce (*Picea Abies*) was very popular for ornamental planting, and many cultivated trees survive in most parts of New England. It is reported as escaped in Maine, Vermont, Massachusetts, and Connecticut. The Scotch pine (*Pinus sylvestris*) has been much used in experiments in forestry and to some extent for ornament; it has spread from seed and become more or less well established at some 15 stations in Maine, Massachusetts, Rhode Island, and Connecticut.

In addition to these foreigners, certain coniferous trees native in northern New England have been planted and have occasionally established themselves in the southern portions of our area. *Abies balsamea* is found as an escape on Cape Cod (where at one time it was much planted), in Rhode Island, and in Connecticut. It is native in the northwestern corner of Connecticut and in the highlands of western and north central Massachusetts. *Picea canadensis* is reported as reproducing abundantly among birches in a sandy area adjoining a cemetery in Griswold, Conn. (*G. E. Nichols*, Rhodora, xxiv. 112 (June, 1922)), at Little Compton, R. I. (*J. F. Collins*), and as occurring at Brookline, Mass. *Pinus Banksiana* has been introduced and produced seedlings at Nantucket (*Bicknell*, Rhodora, xviii. 242 (Dec., 1916)). *P. resinosa* occurs spontaneously about Woods Hole, Mass., as a result of forest planting. At about the time when *Picea Abies* was most in vogue, *Thuja occidentalis* was also fashionable, especially for hedges; it has escaped at a number of stations in southeastern Massachusetts, Rhode Island, and Connecticut. Perhaps the reported station in central Massachusetts (Jackson, Cat. Pl. Worcester Co., Mass., 3rd Ed. 10 (1909)) also originated

from planted trees. The species is apparently native in the towns of Canaan and Salisbury in northwestern Connecticut, but is not so reported from Berkshire Co., Mass., immediately north, where one would expect it (Hoffman, Proc. Boston Soc. Nat. Hist. xxxvi. 204 (1922)).

Geographically (excluding the above-mentioned extensions of natural ranges through cultivation) the species here considered may be grouped as follows, in accordance with the plan of our fourth report (Rhodora, xxvii. 56–65 (1925)).

Generally distributed.—*Pinus Strobus.*

Generally distributed except in southeastern Massachusetts.—*Larix laricina; Picea mariana.*

Northern.—A. *Abies balsamea; Picea canadensis; P. rubra; Pinus resinosa; Taxus canadensis; Thuja occidentalis.*

B. *Abies balsamea*, var. *phanerolepis; Pinus Banksiana.*

Although *Picea canadensis* and *Thuja occidentalis* reach their best development in calcareous regions, their ranges run so far beyond those typical of calcicolous species in New England that they seem best placed in this group. Along the Maine coast, *Picea canadensis* is abundant in many places on or near rocks which are far from basic in their composition. *Thuja* is occasional, but less abundant under such conditions.

Pinus Banksiana is a local species in New England. It is known from five stations on the coast of eastern Maine, from the Dead River valley, Lake Umbagog, Thornton, N. H. and the headlands of Lake Champlain—all, it will be noted, at comparatively low elevations. From the data at hand, *Abies balsamea*, var. *phanerolepis* appears to have a similar range, except as to altitude. It occurs at five stations in the central and eastern portions of the Maine coast, and locally, at high elevations, in the White and Green Mountains.

Neither northern Maine nor southeastern Massachusetts, rather general elsewhere.—*Tsuga canadensis.* We have seen only one specimen of *Tsuga canadensis* from Maine north of the 45th parallel of latitude; reports, however, carry it north to about the 46th, both in the eastern and western parts of the state. Its range, therefore, somewhat overlaps the boundaries of the "northern Maine" area, as laid down in our fourth report.

Southeastern Massachusetts and rather general elsewhere, but not northern Maine.—*Juniperus communis*, var. *depressa.*

Chiefly the three southern states.—*Chamaecyparis thyoides; Juniperus virginiana; Pinus rigida.* *Pinus rigida* occurs northward at low altitudes in the Champlain, Connecticut, Androscoggin, and lower Kennebec valleys, is found in the sandy areas around Lake Ossipee, N. H., and extends along the Maine coast as far east as Mt. Desert Island. Its range is intermediate between typical ranges of this and the preceding group. *Juniperus virginiana* likewise follows the Champlain and Connecticut valleys northward, and the Maine coast eastward as far as the mouth of the Kennebec and Monhegan Island (*J. R. Churchill*). It is said by Dame and Brooks (Trees of New England 26 (1902)) to reach the middle Kennebec valley.

Miscellaneous.—*Juniperus communis; J. horizontalis.* *Juniperus communis* occurs at scattered stations in southern New England and as far north as Gilead, Maine. It is not reported from Vermont. *J. horizontalis* is, except for a single station on the slopes of Mt. Equinox in Manchester, Vt. (*Mary A. Day*), confined to the immediate vicinity of the coast in Maine, New Hampshire, and extreme northeastern Massachusetts (Newbury). It is also reported from Templeton, Mass. (Jackson, Cat. Pl. Worcester Co., Mass. 10 (1909)), but this record is open to doubt and we have not been able to verify it.

C. A. Weatherby,
C. H. Knowlton,
R. C. Bean.

HEDEOMA HISPIDA IN CONNECTICUT.

Edwin H. Eames.

By incidentally traversing one of the comparatively sterile, limestone tracts in Salisbury, Connecticut, a very interesting series of revelations was started. Such areas are attractive in many ways but their flora is limited since few species can endure such hardships.

In this particular place, a pasture with a few scattering red cedars as the only woody vegetation, several small colonies of *Hieracium florentinum* All.—which seems to be getting frequent in such situations—and a few other species usually confined to such soils, together with a sparse growth of grasses, were several colonies of *Hedeoma hispida* Pursh.

Although this species has been found at several other stations in

New England and in eastern New York, the uniform habitat here was very peculiar. This feature was that of a highly restricted calciphile, growing in close contact with the native limestone either in crevices or usually in the shallow soil overlapping the borders of outcrop and occasionally spreading away a few feet.

Time did not permit further investigation until two months later, early September, 1925, when other colonies were found in several nearby pastures of like kind and for some two miles into Sheffield, Massachusetts. It probably extends much further since this Stockbridge limestone continues across the State well into Vermont and along the borders of New York.

As I was returning because of stormy weather, a brief stop in Canaan revealed it then in the Lime Rock region of Salisbury, while some two miles beyond, in Sharon, it was found more or less about most of the outcrops, here dolomitic, over a particularly favorable hilly area of hundreds of acres, just as it did at Salisbury. But here and there it also covered the glacial drift which smoothes the intervening areas and so generally covers the immense mass of rock throughout its geological limits.

It was in Sharon, particularly, that the plants on some broad acres assumed an unsuspected character, that of somewhat spherical plants composed of many stiff branches, to the extent of 35 or 40 in some cases and a foot or so tall and broad: wonderful tumble-weeds they might be during the high winds of Autumn, for this is elevated (to 860 ft.) and much exposed country.

But here, as elsewhere, the plants usually were simple or little branched, 3 or 4 to 10 rarely 12 inches tall. Entirely unbranched plants often become the tallest. At this late season wholly past flowering and mostly crisp-dried and brown.

Associated with the massive form was a profusion of *Verbena stricta* Vent. and upon the drift in another section the dominant thing was what is passing as *Polygala verticillata* L., var. *ambigua* (Nutt.) Wood, many acres of it and all without any seeming tendency toward the species itself, however much that tends to upset preconceived ideas.

This whole area of more than a square mile was more or less misty-gray with *Echium vulgare* L.

In Sharon Valley, beyond, was more *Hedeoma* while in another pasture of the same type was a profusion of *Carduus crispus* L., some

of it fully six feet tall. The *Hedeoma* was noted at several points near the State line in Dutchess County, New York, in Northeast, Amenia and Dover, always on limestone as before, but seen only because of a few wayside observations while homeward bound in an effort to avoid prevailing rains. Further south, especially in Westchester County, New York, and at its southern limits in Connecticut at Ridgefield and parts of Danbury, this limestone is very little in evidence, being largely buried. Not one of the objective plants was seen in several trips. Working northward on several occasions the *Hedeoma* was found sparingly in Danbury and Bethel, about 47 miles from the Sheffield locality.

In Brookfield, next north, it was found exactly as at first, about most of the pasture ledges south of the village and also a carpet of it occupying a once cultivated old field adjoining. So, too, in scattered areas in New Milford and Kent. A little beyond, the formation ends, being connected with the main body of it through a pass in the mountains at Bulls Bridge to South Dover, New York, where great areas are very promisingly exposed. Two detached colonies were found there although many thousand acres remain for later examination. This in itself indicates the probability of recent introduction of the species. Until failure to find the plant here it had been found *in every favorable locality*.

All of this formation was, until the arrival of white settlers, well wooded just as some of it is today, and there was no suitable environment in the region. It seems to be an example of extraordinary dissemination by natural methods of an introduced species.

The surprising rapidity of this is apparent when it is understood that some of the localities noted have been for years more or less familiar to several close students of our flora. It has been shown that in the special habitat several other species have become similarly widespread locally, but no other equals the subject of these notes either in extent or numbers, whereas the native calciphiles have been reduced in numbers as well as congenial locations rather than otherwise.

Bridgeport, Connecticut.

The date of the February issue (unpublished as this goes to press) will be announced later.

Farlow, Bot. Lib.

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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY —NO. LXXVI.

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND

M. L. Fernald

Part I. Journal of the Summer of 1924

In 1910 and 1911 Professor K. M. Wiegand and I spent the collecting seasons in Newfoundland, the first summer on the western, the second on the eastern side of the island. A journal[1] of the trip of 1910, when we were accompanied by Messrs. Joseph Kittredge and Alfred V. Kidder, appeared in Rhodora the following year. On the second trip our companions were Messrs. Edwin B. Bartram and Henry T. Darlington, our center being at Grand Falls on the lower Exploits, whence parties worked eastward to the islands and coves of Notre Dame Bay, southward to the Avalon Peninsula and westward to the headwaters of the Humber; and, although no detailed account of that expedition has been published, the striking contrasts between the floras of the eastern and the western sides of the island have been pointed out.[2] Again, in 1914, I went to southwestern Newfoundland for a very brief trip, primarily to secure better material of a strange *Euphrasia* which Wiegand, Kittredge and I had got in 1910 on Table Mountain, Port-à-Port Bay. This time I was accompanied by one of my students, now Prof. Harold St. John, and we had only a day and a half on the tableland of Table Mountain. The season was very

[1] Fernald: *A Botanical Expedition to Newfoundland and southern Labrador*, Contrib. Gray Herb. n.s. no. xl., Rhodora, xiii. 109–162 (1911).

[2] Fernald: *The Contrast in the Floras of eastern and western Newfoundland.* Am. Journ. Bot. v. 237–247 (1918).

backward, so that we failed to get the *Euphrasia*, but, fortunately, many plants not seen in 1910 were in prime condition in 1914. St. John and I were handicapped by so dense a blanket of fog capping the tableland that we quickly got separated and only after hours of discouraging and lonely tussle through pucker-brush did we come together after dark at our temporary camp. But, botanically, Table Mountain lived up to the high standard it had established in 1910 and we brought back 14 additions to the flora of Newfoundland, including the type material of *Carex misandroides* Fernald,[1] *Salix leiolepis* Fernald, *S. myrtillifolia* var. *brachypoda* Fernald, *Antennaria albicans* Fernald and *Arnica pulchella* Fernald.

The success of the expeditions to western Newfoundland began to stimulate others to try their luck and for two summers Messrs. Ludlow Griscom and Kenneth Mackenzie went to Bay of Islands, Port-à-Port Bay and Bay St. George; but, although the West Coast with the Long Range and its western spurs and often calcareous foreland is always alluring, I was growing more and more conscious of the complete inadequacy of our knowledge of some regions near the eastern and southern sides of the island, particularly the area back of Bonaventure and Trinity; the region about Trepassey, near Cape Race; and the southern coast, east of the Long Range. La Pylaie, Despreaux, Steinhauer, Cormack and other early collectors had carried back to Europe or had reported from southern and eastern Newfoundland many species which are characteristic of western Europe and in some cases the evidence of the species in North America rests solely on their collections or records. Some, such as *Juncus bulbosus* L. (*J. supinus* Moench) and *Potentilla procumbens* Sibth., had been rediscovered and are now well known members of the indigenous flora of southeastern Newfoundland. Others of Atlantic Europe, such as *Potamogeton polygonifolius* Pourret, *Glyceria fluitans* (L.) R. Br., *Sieglingia procumbens* (L.) Bernh., *Juncus effusus* var. *conglomeratus* (L.) Engelm. (*J. conglomeratus* L.) and *Montia rivularis* C.C. Gmel., were added to the Newfoundland flora by Robinson & Schrenk in 1894; and others, including *Agrostis canina* L. and *Festuca capillata* Lam., by Howe & Lang in 1901. Waghorne and his associates increased the number by discovering *Ranunculus hederaceus* L. and *R. Flammula* L., and Wiegand and I in 1911 further augmented the list with the large-

[1] In this account the author of the species will be given only at the first mention of the name; afterward omitted.

panicled typical *Deschampsia caespitosa* (L.) Beauv., the delicate pink-flowered *Pedicularis sylvatica* L. and some other species.

Still, some of the reports needed verification: the reputed collection by Despreaux of *Carex remota* L., by La Pylaie of *Juncus acutiflorus* Ehrh., by Steinhauer of *Saxifraga Geum* L., by Cormack of *Arbutus Unedo* L., and by La Pylaie, Cormack and others of *Calluna vulgaris* (L.) Hull. The first two might easily have been misidentified, but surely the last three could hardly be mistaken; and *Saxifraga Geum* and *Arbutus Unedo,* if they should actually prove to be indigenous in Newfoundland, would be almost dramatic in interest. The Saxifrage is one of the most local of European species, belonging to a relic flora which is otherwise confined to the Lusitanian region and to southwestern Ireland; while Arbutus, although of broad Mediterranean range, is known north of Spain and Portugal only in southwestern Ireland. Of these remarkable plants Praeger, in his *Tourist's Flora of Western Ireland,* says:

> South-west European group.—The characteristic range of the plants of this group embraces Spain, Portugal, SW. France, SW. England and W. Ireland. Two of the constituent species, *Saxifraga Geum* and *Sibthorpia europaea* (the first absent from Great Britain, the second present in S. and W.; both on the Continent confined to the SW.), are in Ireland found only in Kerry and Cork. . . . A third plant of the Kerry group, *Arbutus Unedo,* only differs from *S. Geum* in extending its Continental range all along the Mediterranean.[1]

The Newfoundland occurrence of *Saxifraga Geum* rests on a collection recorded by Dr. N. L. Britton, as follows: "There is a specimen of this species in Durand's Herbarium at Paris, collected by the Rev. Mr. Steinhaur, in Newfoundland. It is erroneously labeled by Durand *S. spicata,* Don. This appears to be the first indication of its occurrence in America."[2] As to *Arbutus Unedo,* the Newfoundland record was by Cormack in his *Narrative of a Journey across the Island of Newfoundland,* the mere note that the shrub occurs "on the summits of the hills" near Bonaventure. Cormack was a keen observer and his plants were presumably identified by Jameson, who surely knew *Arbutus.* There is no shrub in Newfoundland which even a casual observer would be likely to confuse with *Arbutus Unedo,* except possibly *Viburnum cassinoides* L., but Cormack clearly knew the Viburnum and wrote of it by name. He may have intended *Arbutus*

[1] Praeger, Tour. Fl. W. Irel. 25 (1909).
[2] Britton, Bull. Torr. Bot. Cl. xviii. 270 (1891).

alpina (now *Arctostaphylos*) but elsewhere in his *Narrative* he speaks of the latter by its correct name.

Calluna vulgaris, the Heather or Ling, has been many times reported from the southeastern section of the Avalon Peninsula and it was recorded by Sir William Hooker, in a foot-note from the Index of his *Flora Boreali-Americana*, as follows: "This should have been inserted at p. 39, as an inhabitant of Newfoundland, on the authority of De la Pylaie." In the period from 1861 to 1864 many records of *Calluna* as a Newfoundland plant were published, but the most significant was by Seemann:

> The doubt still lingering about the occurrence of this plant in America is dispelled by a lucky find of Mr. Hewett C. Watson. Amongst the plants he bought at the sale of the Linnean Society's Collections in November, 1863, there was a parcel labelled outside, "A Collection of Dried Plants from Newfoundland, made by—Mac Cormack, Esq.,[1] and presented to Mr. David Don"; and in this parcel were found two specimens of *Calluna vulgaris*, with the following label:—"Head of St. Mary's Bay; Trepassey Bay also very abundant, S. E. of Newfoundland, considerable tracts of it." These specimens, as far as they go, agree exactly with our European ones, but unfortunately they have no flowers. . . . . .
>
> Mr. Watson's specimens place it beyond doubt that a plant very closely allied to, if not absolutely identical with the *Calluna vulgaris* of the Old World covers large tracts of Newfoundland . . . it is common in Ireland, Iceland, and the Azores, and its extension to Newfoundland and the American continent is therefore not so much a paradox as a fact, at which we might almost have arrived by induction.[2]

Somewhat later Watson, himself, gave an account of his discovery, adding in regard to the Cormack package: "The specimens were old, and greatly damaged by insects. Apparently, they had been left in the rough, as originally received from the collector; being in mingled layers between a scanty supply of paper, and almost all of them unlabelled."[3] Others proceeded to collect *Calluna* in southeastern Newfoundland and in 1866 Seemann described from cultivated material, said to have come originally from Newfoundland, *Calluna atlantica*,[4] a species not now generally maintained as distinct from the European *C. vulgaris;* and Reeks, in 1873, wrote: "Through the kindness of the Bishop of N.F.L., I have recently received a liberal supply of this

[1] "Probably W. E. Cormack (supposed to have been a merchant), who made several voyages to Newfoundland. In copying his name 'Mr.' was probably mistaken for 'Mc'."

[2] Seemann, Jour. Bot. ii. 55, 56 (1864).

[3] H. C. Watson, Nat. Hist. Rev. xiv. 312 (1864).

[4] Seemann, Journ. Bot. iv. 306, t. 53 (1866).

plant in flower. The specimens were gathered near Capelin Bay in about 47° N.L., and 53° West long." [1]

This array of seemingly authoritative data, to which much more might be added, indicating the comparative frequency of *Calluna* in the southern part of the Avalon Peninsula, was a bit irritating to one who had devoted much time to botanical exploration in Newfoundland but who had never seen *Calluna* growing wild; and the less thoroughly attested, though much more thrilling records of the occurrence in the region of *Saxifraga Geum* and *Arbutus Unedo* still further kindled the imagination. And, since Wiegand and I had personally seen, as indigenous plants of southeastern Newfoundland, many European species which are rare or unknown on the continent of North America, I had long felt that the next botanical trip to Newfoundland certainly ought to be to the southeast corner, from Trinity Bay to Cape Race and Trepassey.

Before this plan could be carried out, however, another region of Newfoundland began to assume botanical importance—the south side of the Straits of Belle Isle. The only records which we had had from the Straits were those of La Pylaie from Quirpon, at the extreme eastern end of the Straits, some interesting things but nothing remarkable enough to indicate that the region needed further exploration; and a single record from Flower Cove at the extreme western end of the Straits: *Caltha palustris*, a species common on the West Coast. But when she went to Flower Cove to take charge of the Grenfell hospital there, Miss Mary E. Priest most kindly offered to collect and send to me some plants of the region. These collections, made in Miss Priest's very rare moments of leisure in 1920 and 1921 and mostly from near the hospital, were indeed a revelation: many species such as our representative of *Parnassia palustris* L. and *Lomatogonium rotatum* (L.) Fries, the records of which in Newfoundland had rested exclusively on the authority of La Pylaie a century ago, or of Banks a full half-century earlier (1766); others, like *Festuca vivipara* (L.) Huds., *Salix arctophila* Cockerell, *S. reticulata* L., *Draba megasperma* Fern. & Knowlt. and *Cochlearia tridactylites* Banks, which had been known for the most part from only a single station; and 11 quite new to the flora of Newfoundland: *Eriophorum opacum* (Björnstr.) Fern., a species characteristic of Lapland and the Canadian Rocky Mountain region; *Carex microglochin* Wahlenb., one of the

[1] Reeks, List Fl. Pl. & Ferns of N. F. 4 (1873).

most famous of rarest sedges, here found for the first time in eastern America; a form of *Habenaria viridis* (L.) R. Br., an arctic-alpine orchid of Europe, now recognized for the first time in the flora of North America; *Arenaria peploides* var. *diffusa* Horneman., *Cerastium alpinum* var. *lanatum* (Lam.) Hegetschw., *Alchemilla vulgaris* var. *vestita* (Buser) Fern. & Wieg., *Primula farinosa* var. *incana* (M. E. Jones) Fern. and *Gentiana propinqua* Richardson, these five already known from the Labrador side of the Straits and consequently to be expected; *Statice labradorica* (Wallr.) Hubb. & Blake (var. *genuina* Blake), the first time south of the Torngat region of northern Labrador; *Primula egaliksensis* Wormsk., a Greenland species which has been very poorly if at all represented in American herbaria; and one of the original collections of *Tanacetum huronense* var. *terrae-novae* Fernald.

These collections were thrilling, for Miss Priest was not a trained botanist, her duties at a mission-hospital on a rough coast were exacting and time-consuming and she had to spend much of both summers "on the Labrador"; and the long-dreamed-of plan, that the next Newfoundland expedition should be for Atlantic European types near Cape Race, began to be confused by an equally urgent ambition to go directly to the Straits. The Mt. Logan campaign of 1923 had been organized, however, and Newfoundland field-work had to be postponed until 1924. In 1923, while I was in the mountains of Gaspé, the Biological Board of Canada undertook a survey of the Straits of Belle Isle and the invitation to join in this enterprise reached me too late for action. Consequently, the efficient Director of the Board, Dr. A. G. Huntsman, himself collected such land plants as came his way. He was quite impartial as to whether he collected on the Labrador or the Newfoundland side of the Straits and he disclaimed any technical botanical knowledge or ability to recognize species of special interest. His collection showed, however, that *Primula egaliksensis* and *Gentiana propinqua*, found for the first time in Newfoundland by Miss Priest, were common the whole length of the Straits; that *Phleum alpinum* L., *Poa eminens* J. S. Presl, *Stellaria crassifolia* Ehrh., *Hymenolobus procumbens* (L.) Nutt., *Lomatogonium rotatum* and *Euphrasia arctica* Lange were not so rare as had been supposed; and he had *Rumex occidentalis* Watson and *Erigeron borealis* (Vierh.) Simmons, new to the island (as well as a few additional species from Notre Dame Bay and Bay St. George).

It was, therefore, quite natural, when Messrs. Bayard Long, Boyd

Dunbar and I started from Boston in July, 1924, ostensibly to go to Trepassey and to Bonaventure to search for *Calluna vulgaris* or *atlantica, Saxifraga Geum, Arbutus Unedo* and other Atlantic European species which might be associated with them, that we began to reason in this fashion: "We shall land at the southwest corner of Newfoundland, at Port aux Basques; the train runs almost half-way to the Straits west of the Long Range before swinging eastward across the island; the "Home" sails every Wednesday evening from Humbermouth for the Straits; consequently, it would be botanically almost a crime 'to not take he' (Newfoundlandish) north 'down to the Straits' over just one trip." Yielding to this and similar reasoning, we began to shift the itinerary. We landed at Port aux Basques early on the morning of Sunday, July 20, and we knew that the "Home" would not sail from the Bay of Islands until Wednesday night; so, after passing the Customs, we hunted up a boarding place at Port aux Basques, Mrs. Ben. Billard's, a clean and comfortable home, Mrs. Billard being a kind and motherly landlady and one of the best cooks we have ever had the pleasure of meeting in Newfoundland—a place we later looked back to with yearning stomachs.

Port aux Basques itself is on a granite outcrop, but a few miles to the east and north rise the sharp gneissic and schistose crests of the Long Range and, remembering that it was only slightly to the north, on the vast Table Mountain of Cape Ray, that Professor A. P. Coleman had found an extensive area of unglaciated summit, we started hopefully toward the southern end of the Table Mountain mass. The great interest of western Newfoundland lies in the fact that, although local glaciers scoured and altered the surface deposits of central and eastern Newfoundland, the high tablelands of the Long Range and the mountains to the west seem largely to have escaped Pleistocene denudation, and that in this region of but slightly glaciated tablelands we find a phenomenal number of highly localized species isolated from the cordilleran area of America, the unglaciated Arctic Archipelago, and regions of Asia, Europe and northwestern Greenland which were outside the later advances of Pleistocene ice. The occurrence of these isolated colonies or of endemic representatives of cordilleran, Asiatic or high arctic types in western Newfoundland had long been occupying my attention, and shortly before leaving Cambridge I had turned in for publication a discussion of the question.[1]

[1] Fernald: *Persistence of Plants in Unglaciated Areas of Boreal America* (Mem. Gray Herb. ii). Mem. Am. Acad. xv. No. iii (1925).

We were, therefore, anxious to utilize this opportunity to reach the unglaciated crest of the southern tip of the Long Range.

Long and Dunbar had never been in Newfoundland and, in spite of written and verbal accounts, were really not prepared to find the alpine flora of Mt. Washington growing at sea-level in latitude 47° 30′, there mingled with typical species of the New Jersey Pine Barrens and the southern coastal plain,[1] the latter plants often ascending to the highest mountain-crests. And with these species of such different geographic origin there occur on the mountain-barrens back of Port aux Basques, as elsewhere through the whole breadth of southern Newfoundland, several species which on the continent we consider as introductions from Europe, but which in Newfoundland are clearly indigenous. Thus, in our two days in the field back of Port aux Basques we were constantly finding on the bare ledges *Festuca capillata* Lam. (European) quite as definitely indigenous as the arctic *Diapensia lapponica* L., *Carex rigida* Good., *Loiseleuria procumbens* (L.) Desv. or *Arctostaphylos alpina* (L.) Spreng. with which it grew; while in wetter pockets or on seeping banks the European *Agrostis canina* L. was found as far back and as high (about 1000 feet) on the uncultivated slopes as we had time to ascend, and with it or in similar habitats were the arctic *Carex stylosa* C. A. Meyer and *C. rariflora* Sm. and the Pine Barren *Schizaea pusilla* Pursh, *Lycopodium inundatum* var. *Bigelovii* Tuckerm. or *L. adpressum* Lloyd & Underw. (the latter new to Newfoundland) and, in pools, *Potamogeton confervoides* Reichenb. and *Utricularia geminiscapa* Benj. (*U. clandestina* Nutt.).

The fascination of the lower slopes and barrens, the necessity of properly caring for our collections and the encountering, on our second day, of an impassible mountain-stream, kept us from reaching the unglaciated tablelands. Scattered at all levels on the slopes were colonies *of Luzula campestris* var. *congesta* (Thuill.) Meyer, a plant well known in Eurasia and from British Columbia to southern California but not heretofore in eastern America; and in a bit of hudsonian thicket bordering a seepy bank Long found a small colony of *Mitchella repens* L., the Partridgeberry of the eastern States, for which the Newfoundland record was doubtful. There was only a tiny patch, and the corolla was white and odorless, quite lacking the pink tinge and the delicious fragrance of the plant of the continent. But we found two

[1] See Fernald: *A Botanical Expedition to Newfoundland and southern Labrador*, Rhodora, xiii. 135–162 (1911).

other species which we had not previously thought of as peculiarly fragrant. One was the ubiquitous *Rosa nitida* Willd. This shrub was in such beautiful condition that we yielded to the temptation to put some into our collecting boxes, although herbaria are full of Newfoundland specimens. Opening our boxes in the evening, we were surprised by a delicious and pervading fragrance as of tuberoses (*Polianthes tuberosa* L.). This came from the flowers of *Rosa nitida* and our respect for the common rose of southern and central Newfoundland vastly increased. The other peculiarly fragrant plant was the endemic ragged orchis of Newfoundland, *Habenaria lacera* var. *terraenovae* Fernald,[1] a characteristic plant of bog and tundra, with cream-white to crimson-lake flowers and a most delicious fragrance suggestive of lily-of-the-valley, *Convallaria*.

Wednesday morning we were on hand for the departure of the tri-weekly train which was to leave at 8 o'clock for Humbermouth and St. John's. In the old days, when this was the Reid road, jokes about the train and its never crossing the island without getting off the track were endless, but now it is the Newfoundland Government Railway and as we inspected the little engine our Yankee sense of humor was tickled by the symbol: "N. G. Ry." But we got away promptly and in half an hour were making great speed along the rails near Cape Ray when, bang! there was a sudden jolting and crashing. Rushing out the door opposite the vestibule of the dining car, I received a flying kettle of hot oatmeal porridge on my one respectable suit of clothes and slid in the slime off the platform. The poor little N. G. engine was out of sight over the bank and, heaped in ruins on top of it, were the two express, mail and baggage cars, with the tracks ripped up and thrown into fantastic curves. Worst of all, the fireman and mail-clerk had been instantly killed, the engineer was pinned under the wreckage and scalded nearly to death and the brakeman was so firmly wedged between two cars that it took an hour of prying with telegraph poles to extricate him. There was no engine at the Port aux Basques end of the line and it was late in the evening before a wrecking train arrived from the north, and afternoon of the next day before the passengers could be started north and east. We pictured the "Home" as then well on the way to the Straits of Belle Isle and our consciences whispered that we were being punished for yielding to the temptation to abandon Cape Race for the allurements of the opposite corner of

[1] Fernald, Rhodora, xxviii. 21 (1926).

the island. But as we approached the Bay of Islands the conductor informed us that the "Home" had run aground in the Straits and that the "Glencoe," substituting for her, was awaiting the arrival of our train at Curling before proceeding north.

The "Glencoe" reached Flower Cove Saturday afternoon and on the wharf we identified Parson Richards, the English Church missionary of the Straits, a rare man to find in such a remote region, cultured, up-to-date and alert. With his aid we quickly found a home at the house of Mrs. John Whalen, mother of many sturdy sons and many times a grandmother, known to all the community as "Aunt Eliza"; and then Parson Richards got his push-cart and, in the generous spirit which we soon learned to expect in him, insisted on helping us trundle our heavy trunks over the ledgy and peaty lane from the wharf to our new home.

The metropolis of the Straits of Belle Isle has its fishermen's houses, its wharves and its warehouses straggling along the shores of three coves at the southwestern entrance to the Straits; French Cove at the southwest, where the harbor, the principal wharves, the custom house, court house, post-office, English church and the stores are located; then, separated from French Cove by Capstan Point, the real Flower Cove, too open to the Straits for a good harbor; then, east of Flower Cove and separated from it by Nameless Point, where another considerable colony lives, comes Nameless Cove. Eastward beyond there, come cove after cove with their respective fishing colonies and their intermediate points: Mistake Cove, Yankee Point, Savage Cove, Savage Point, Sandy Cove (the name changed in these sophisticated days from the older Poverty Cove) and so on to Eddies Cove, then the Long Straight Coast, Big Brook, Boat Harbor, Cape Norman, Cape Onion, Cape Raven, Cape Bauld and, way in the offing, Belle Isle itself. The country back of Flower Cove is almost as flat as an open prairie, consisting of horizontal white limestone which shelves so gradually into the sea as to make navigation extremely ticklish. Inland and southward there is an alternately treeless and woody sky-line, with an occasional low limestone escarpment rising ten or perhaps twenty feet; but the only elevations of note seen to the south of Flower Cove are visible only on the clearest days: Bard Harbor Hill and Doctor Hill (together forming the Highlands of St. John of maps and charts—a name never used by the natives), rising 1900 feet from the shore of St. John Bay.

Our first walk was a stroll after supper around Capstan Point. We were strangers and the young sledge-dogs of the community promptly recognized us as such and, in our inexperience, we were nearly knocked down by the big good-natured puppies all jumping upon us at once and anxious to give us a welcome—or perhaps to get something novel to eat. The drying stages for the cod ran from the houses down to the shore; in many yards great frames covered with stretched and curing seal-skins stood like targets beside the upturned sledges, and tepee-like stacks of logs for firewood, hauled in winter by dog-sledge from the woods five miles back, added further novelty to the picture. Enclosed in high fences in almost every yard were the older dogs, forbidden by Newfoundland law to run free in summer, yelling and snarling in a hundred different tones and keeping up a chorus (the "Labrador band") from sunset to sunrise. On a submerged ledge at the entrance to Flower Cove lay a big black coal-steamer, the *Njordfjeld*, aground and abandoned with her cargo some years ago, with the result that every family on this coast has a fine stock of anthracite. One devout soul unblushingly said, "We has enough coal for fifteen years and before that time we prays God to bring another wreck to we." Some of the women and girls were bringing pails of water on shoulder-yokes from the springs outside the village, others were milking the cows, and the men were working on their seal-skins. This was all a new life to us and, when we got outside the little village and felt the stiff north wind blowing right across from the icebergs which had stranded near Point Amour, we began to imagine ourselves in Greenland or in Lapland rather than in latitude 51°.

And this impression was intensified as soon as we saw the solid carpets of color displayed by the arctic plants on Capstan Point: the turfy border of the limestone shingle a veritable maze of Greenland and Lapland species, with a good sprinkling of Alaskan or Siberian types and a few species endemic to eastern America to differentiate this from more northern arctic spots. *Salix reticulata* L., with purple-veined orbicular leaves, *S. cordifolia* Pursh, with grayish foliage, *Lonicera villosa* (Michx.) R. & S., grayish and velvety, *Shepherdia canadensis* (L.) Nutt, golden-bronze and silvery, *Arctostaphylos alpina* and *Silene acaulis* var. *exscapa* (All.) DC. formed broad flat carpets through which projected *Botrychium Lunaria* (L.) Sw., *Stellaria longipes* Goldie, the whole plant strongly whitened, *Festuca vivipara*, forming dense clumps with plumes of leafy tufts replacing the in-

florescences, *Primula farinosa* L., with lilac flowers, and dozens of other fascinating species. There were great carpets of *Gentiana nesophila* Holm, like our sky-blue Fringed Gentian but lower and fleshy, and with it the lilac-flowered *G. propinqua* or its close relative, *Lomatogonium rotatum*, with porcelain-blue to white rotate corollas. The handsome plant which had been mistaken for *Parnassia palustris*, but which is separated from the European plant by many characters (to be discussed in Part III.), beautiful with its abundant creamy-white flowers, abounded; the moss-like *Saxifraga cespitosa* L., with erect milk-white flowers, made dense turf; the little "Plumboy," *Rubus acaulis* Michx., was in full bloom, a dwarf herbaceous raspberry, its showy rose-red flowers with a fragrance like that of *Epigaea repens*. *Primula egaliksensis*, which we had been most anxious to see, was unmistakable, with its strictly erect pedicels and white flowers; a little plant with crisp white pubescence, which we took to be *Euphrasia Oakesii* Wettst., the tiny alpine species of the White Mountains, abounded, although insignificant beside the large bushy-branched *E. arctica* and *E. disjunsta* Fern. & Wieg.; and of course there were the inevitable displays of Harebell, *Campanula rotundifolia*, "Wild Tansy," *Achillea Millefolium* var. *nigrescens* E. Meyer, *Anemone parviflora* Michx., *Draba incana* L. and *rupestris* R. Br., *Arabis alpina* L., *Thalictrum alpinum* L., *Cerastium Beeringianum* Cham. & Schl., and many others, every one of them adding to the picture and giving us a new thrill.

Naturally we did not now care whether the "Glencoe" called on the return trip Monday. We had no further interest in her, and Cape Race and Trepassey were far from our thoughts. So we stayed over "just one more" trip—another week; and in all that time, collecting all day and caring for our plants late into the evening, we only once got more than half a mile from the village. The springy swales were full of a very delicate *Epilobium*, with narrowly linear and repand-denticulate leaves and abundant arching basal branches, *E. wyomingense* A. Nelson, heretofore known only from Yukon to Utah; and in all damp thickets or springy slopes *Taraxacum lapponicum* Kihlm. abounded, while another dandelion or "Dumble d'Or" still lingered in flower, a plant with extraordinary rhombic appendages to the long recurving bracts, *T. lacerum* Greene, another cordilleran species which we had not known in eastern America. A stone's throw from the parsonage there was a shallow pool bordered by the snowy white

arctic cotton grass, *Eriophorum Scheuchzeri* Hoppe, which we had not definitely known from Newfoundland, and as we hurried toward it the quality of the turf under foot suddenly changed and we found ourselves in a dense carpet of a strange sedge with short arching culms and dense chestnut-brown heads, *Carex incurva* Lightf., which we had not known south of Cape Chidley at the entrance to Hudson Straits. This exciting little sedge formed compact turf and it took a full hour to dig out and properly to clean the specimens—a task prolonged and rendered difficult because a pack of half-grown puppies discovered us and insisted on competing with our hand-picks in digging the specimens, and then they proceeded to tear to pieces those we had already cleaned. When at last we got to *Eriophorum Scheuchzeri* and pulled in some sods we found that another arctic species, likewise new to Newfoundland, was creeping among the culms, *Ranunculus hyperboreus* Rottb., a tiny plant with 3-lobed leaves and pale flowers and 3 sepals and 3 petals.

We had been particularly looking forward to collecting *Carex microglochin*, not on account of its beauty, for it looks like a needle with a few scales at the summit, but because it is one of the rarest and taxonomically most interesting of species, having the primitive rachilla, which is obsolete in most modern *Carices*, projecting from the tip of the perigynium; in other words, *C. microglochin* is an excessively local relic-species now known in only a few remote corners of the globe and about as well placed in the Antarctic genus *Uncinia* as in the great genus *Carex* which abounds in the northern hemisphere. Consequently, when we first came upon this unpretentious but truly aristocratic plant, scattered and rare as we felt it ought to be, we carefully dug the individuals and gently tucked their bristly tops into paper bags that we might lose none of the precious fruits; at that stage we spoke of it by its full name, *Carex microglochin*, and had a feeling that we ought to give it some title. A little later, finding it more common than the few straws in herbaria could possibly suggest, we began to feel familiar and called it "Mike"; then, as the week wore on and we saw it in every low place in the lime-barrens, we referred to it as "Mike O'Glochlin"; and before we had left the Straits Coast, noticing that it followed many paths where its prickly little fruits had obviously been spread by pedestrians with their high skin-boots, our attitude had completely changed and we spoke of it as "Mike O'Glochlin, the Bootlegger."

Beyond the low escarpment which rises southeast of the harbor is

the Rock Marsh, a broad barren with alternating areas of tundra, swale, thicket, pond and limestone pavement. Here in the wet depressions abound the curious sedge, *Kobresia simpliuscula* (Wahlenb.) Mackenzie, the pale-headed rush of Greenland and the Canadian Rockies, *Juncus albescens* (Lange) Fernald, the Norwegian and Rocky Mountain cotton grass, *Eriophorum opacum*, the trailing Greenland willow, *Salix arctophila* Cockerell, a species with small lustrous leaves and great black-scaled catkins seeming wholly out of proportion to the size of the shrub. Closely mingled with these and dozens of other choice species were the plebeian Bog Bean, *Menyanthes trifoliata* L., "Indian Jug," *Sarracenia purpurea* L. and "Tobacco Leaf," *Sanguisorba canadensis* L.; and I well remember Long's disgusted remark: "Up here, Bog Bean hobnobs with the best of 'em."

Except for the scattered thickets of spruce and fir we might, when we stepped upon the rock barrens, have been 20 degrees farther north, on the Arctic Archipelago or in arctic Alaska; the rock was deeply rotted limestone pavement, with ragged and long-weathered angular fragments and deep perpendicular-walled chasms. *Salix reticulata*, still fascinating to us, a species of wide arctic dispersal, the strange *S. calcicola* Fern. & Wieg., with sessile reniform to round-cordate leaves, persistent stipules and fat terminal aments, like candles on a candelabra, the eastern representative of the Alaskan *S. Richardsonii* Hook., and the more familiar Lapland Rosebay, *Rhododendron lapponicum* (L.) Wahlenb., the Purple Saxifrage, *Saxifraga oppositifolia* L., and the most widely spread shrub of the Arctic Archipelago, *Dryas integrifolia* Vahl, formed the carpet. In the drier gravel the brown-headed *Antennaria cana* (Fern. & Wieg.) Fern., a western Newfoundland representative of the arctic *A. alpina* (L.) Gaertn., abounded; *Carex rupestris* All. formed close turf and the tiny *C. glacialis* Mackenzie, of arctic Eurasia, Greenland and Alaska, formed characteristic little tufts, as it does the length of the limestone belt of western Newfoundland. In damper gravels or moist pockets in the ledges, the rigid *Equisetum variegatum* Schleich., the yellow-flowered *Saxifraga aizoides* L. and the easily overlooked *Arenaria dawsonensis* Britton were frequent; and we were particularly glad to get good material of *Allium Schoenoprasum* var. *sibiricum* (L.) Hartm., for Wiegand's and my material collected in 1910 was different from the plant of ledgy shores in the northern United States and Canada. This additional material is like all other from western Newfoundland and seems to be

true var. *sibiricum*, the plant of rocky shores across the continent being different in some details to be discussed in Part III.

Returning from the Rock Marsh, we followed a trail which brought us through a springy swale back of the hospital. There, among other interesting things, was a bronze-panicled grass with very contracted inflorescences and large spikelets. At first we took it for a *Deschampsia* but it proves to be *Agrostis melaleuca* (Trin.) Hitchc. of Alaska and mountain-meadows southward in western America.

Daylight in early summer at latitude 51°–52° is so much longer than we are used to in the latitudes from Boston to Philadelphia that we never knew when to stop work, and many a fisherman and his family there retire in summer at 11 o'clock or later, when it gets dark, and are up at dawn and attending to their cod-traps at 2. We did not have quite their necessity to utilize all the daylight during the fishing season; but one evening, while Long and I were calling on Parson and Mrs. Richards, Miss Fitch, one of the Grenfell workers, came to remind me that I had promised to supply Miss Meister, who was in charge of the hospital during Miss Mahoney's absence, a series of specimens of edible wild plants of the Straits. Accordingly, as it was only 10 P.M., we all started along shore toward the hospital, gathering in the early twilight such edible plants as were available in that short distance: "Alexanders" (*Ligusticum scothicum* L.), "Heltrope" or "Embloch" (*Heracleum lanatum* Michx.), "Goose-tongue" (*Plantago oliganthos* R. & S.), "Cowslip" (*Caltha palustris*), Dock (*Rumex occidentalis* and *R. Patientia* L.), Nettle (*Urtica* sp.), Wild Spinach (*Atriplex glabriuscula* Edmonston), "Dumble d'Or" (*Taraxacum* sp.); and when we reached the hospital we did not really need the cocoa and cakes Miss Meister provided, for each of us had been nibbling one or another of the native salads of the sea-shore: Scurvy Grass (*Cochlearia tridactylites*), Sea Purslane (*Arenaria peploides*), Rose Root (*Sedum roseum* (L.) Scop.) or Sea Rocket (*Cakile edentula* Bigel.). I was urged to write out directions for recognizing and cooking the collection and as fast as I finished one sheet it was copied by several hands, while one or two of the young ladies made drawings of the plants. When we got through there was a limited, illustrated edition, autographed and ready for use by teachers along the coast; but it was 1:30 A.M.! Miss Fitch had to be teaching school four miles away at 9 o'clock, Miss Meister must walk next day sixteen miles with her heavy kit to attend cases at Eddies Cove and we had planned to get an early start on an all-day trip to Sandy (or Poverty) Cove.

(*To be continued*)

THE INTERNATIONAL CONGRESS OF PLANT SOCIETIES TO BE HELD AT ITHACA.

There will be held at Ithaca, N. Y., August 16–23, 1926, an International Congress of Plant Societies. This meeting, in the words of its Organizing Committee, "is intended primarily to bring together a widely representative gathering for the presentation and consideration of fundamental contributions to the research and educational aspects of plant science, including agriculture, horticulture, forestry, plant pathology, plant breeding, bacteriology and other specialized phases." It is further stated that "the Congress will enact no legislation, though adequate opportunity will be afforded for the discussion of any topics of interest to groups of plant scientists."

The programme is being arranged in 13 sections, each of which will have 4 morning sessions in addition to the more general sessions of the Congress.

Invitations to foreign botanists and those engaged in the applied aspects of plant science have been sent out widely, and it is confidently believed that the occasion will be one of exceptional interest both on account of the notable papers to be presented, and in furthering personal acquaintance between the representatives of different fields.

It is to be hoped that American botanists will see in this Congress an obligation as well as an opportunity and that they will combine in doing their utmost that the gathering may be representative, and that our foreign guests may receive the attentive treatment which was so charmingly accorded to those who attended the preceding Botanical Congresses, of which the most recent were in Brussels in 1910 and in Vienna in 1905.

Participation in the formal sectional programmes will be by invitation only; since it is the policy of the Committee to limit the schedule papers to a relatively small number in order to leave time for less formal discussion. An effort is being made to secure for speakers those scientists whose accomplishments as investigators or teachers have made them leaders in their respective fields.

The Organization Committee is as follows: B. M. Duggar, *Chairman*, Missouri Botanical Garden, St. Louis, Mo., H. C. Cowles, *Sec.*,

University of Chicago, Chicago, Ill., H. H. WHETZEL, *Local Arrangements,* Cornell University, Ithaca, N. Y.

The Programme Committee consists of J. R. SCHRAMM, *Chairman,* University of Pennsylvania, Philadelphia, Pa., L. W. SHARP, *Sec.,* Cornell University, Ithaca, N. Y.

ASTER ERICOIDES L.

KENNETH K. MACKENZIE.

THE original description of *Aster ericoides* L. (Sp. Pl. **2**: 875. 1753) is as follows:

"16. ASTER caule paniculato, pedunculis racemosis: pedicellis foliosis: foliolis linearibus integerrimis. *Gron. virg.* 100.

"Aster caule paniculato, floribus racemosis, calycibus patulis oblongis, foliis subulato-linearibus. *Roy. lugdb.* 168.

"Aster ericoides dumosus. *Dill. elt.* 40. *t.* 36. *f.* 40.

"*Habitat in* America *septentrionali.* 2l."

Royen (Fl. Leydensis Prodr. 168. 1740) merely gave the descriptive phrase cited by Linnaeus and the same reference to Dillenius cited by Linnaeus.

Both Clayton's plant (Gray Proc. Am. Acad. **17:** 165. 1882) and the plant well figured by Dillenius are what is now known as *Aster multiflorus* Ait.

The specimen in the Linnaean herbarium is a specimen of the common plant currently treated in our manuals as *Aster ericoides.* This specimen was, however, not in the Linnaean herbarium until after 1755 (Jackson, Proc. Linn. Soc. 1912, Suppl. 41), and in consequence has no bearing whatsoever upon the identity of *Aster ericoides* L.

With the exception of the fact that the specimen in the Linnaean herbarium was not there in 1753, the above facts were all well-known to Dr. Gray, but with utterly ununderstandable logic he refused to use the name properly (Proc. Am. Acad. **17:** 165. 1882). As will be noted the species was based by Linnaeus entirely upon the works of previous authors, and as all of these references are happily to the same species, the name can only be properly used for that species. So in place of *Aster multiflorus* Ait. we must write *Aster ericoides* L.

MAPLEWOOD, NEW JERSEY.

Regarding an unauthorized Publication on the Vegetation of the Virgin Islands.—A short time ago I was astonished to find in Botanical Abstracts, Vol. 14, Entry 1280, an abstract of a paper cited as: "Börgesen, F.C.E. On the vegetation of the Virgin Islands of the United States, formerly the Danish West Indies." Govt. Printing Office: St. Thomas, 1923.

Not knowing of any paper which I had edited since these islands had been sold and being in correspondence with Dr. Frederick V. Rand, Associate Editor in Chief of Botanical Abstracts, I wrote to him explaining my astonishment at seeing the quotation and asking if he could procure for me a copy of the paper. Dr. Rand most kindly wrote to St. Thomas and obtained a copy which I have now received from him. Its title on the first page, which is also the title-page, is the same as noted above with the exception that only the first letter, "F." of my christian names is given. On page 3, above the text, the title is given as: "On the vegetation of the Danish West Indies. By F. Börgesen, Ph.D. (Translated from the Danish by Fred MacFarlane)."

On reading the paper I immediately saw that it was a translation of a small popular sketch on the vegetation, which I wrote in 1909 as a contribution to "De danske Atlanterhavsöer," a book which was intended to give an idea of the conditions in Iceland, the Faroe Islands, Greenland and the Danish West Indies.

My pamphlet is a very short and popular description of the vegetation of the islands not at all intended to be translated into other languages. It is therefore easily understood that my astonishment was great at the discovery of this translation and still more so in that the translator had not asked my permission at all. Now, of course the whole thing is not of much importance except that, unfortunately, a plant, *Xanthium spinosum*, had been by mistake mentioned together with other plants found near the outskirts of village and estates. Prof. Britton of the New York Botanical Garden, who is working out a flora of these islands, wrote to Prof. Ostenfeld about this plant asking if it was true that it was found there. At first I could not understand where this statement originated, as in my botanical papers on the land vegetation of the islands I have dealt only with the seashore vegetation. However, at last I remembered my small pamphlet and found the mistake which on this occasion I am thus able to correct, *Xanthium spinosum* being a typographical error for the American species, *X. longirostre* Wallr.

May I add that had I known Mr. MacFarlane wanted to translate my paper I should have been glad, after revising it, to have given him permission and at the same time to have loaned him my photographs of the vegetation, these being of special importance to my paper. —F. Börgesen.

A new Station for Cyperus erythrorhizos.—Unless *Cyperus erythrorhizos* Muhl. is represented by an unpublished record in some private collection, it is probable that this sedge, local in its New England distribution, is rare in southeastern Massachusetts and in Rhode Island, for there are no specimens from these areas in the herbarium of the New England Botanical Club or that of the Boston Society of Natural History. Nor is it listed in the floras of Hervey, Jackson, Hedge, or the 1920 revision of Bennett's Plants of Rhode Island.

It was, therefore, with considerable satisfaction that the writer found a small colony of this iridescent, chestnut-bronze, red-rooted Cyperus on the sandy shore of a small pond in Westport, Bristol County, Mass., Aug. 30, 1925.

The plant is supposed to have been collected nearly a century ago, by William Oakes, on Nantucket; there are several stations for it between Boston and Lawrence, Mass.; at least one at Newburyport, Mass., and it seems to be frequent in the Connecticut valley, appearing at Springfield, Mass., Windsor, Hartford and Middletown, Conn., as well as at Southington in the latter state. It is also said to be common in the Mississippi valley.—S. N. F. Sanford, Boston, Mass.

Oxalis,—A Correction.—My attention has been called to an error in the article on *Oxalis corniculata* and its relatives in the July and August numbers of Rhodora of last summer. As corrected the nomenclature should be as follows: O. pilosa Nutt. (*O. Wrightii*, var. *pilosa* Wiegand. Rhodora, xxvii. 120, 1925). O. pilosa Nutt., var. **subpilosa**, comb. nov. (*O. Wrightii*, var. *subpilosa* Wiegand, l. c. 119, 1925). O. pilosa Nutt, var. **Wrightii** (Gray), comb. nov. (*O. Wrightii* Gray, Pl. Wright. i. 27, 1852, and Wiegand, l. c. 119, 1925). The Nuttall name obviously antedates that of Gray by many years.—K. M. Wiegand, Cornell University.

Corydalis flavula in Connecticut.—I am very glad to put on record the finding of *Corydalis flavula* (Raf.) DC. on the top of Mt. Higby, a long trap range west of Middletown, Connecticut. The few plants observed were growing on a very exposed and rocky patch of ground. The place abounds with the commoner *Corydalis sempervirens*, *Dicentra Cucullaria*, and *Clematis verticillaris*.

Corydalis flavula grows in the southeastern counties of New York, but has not hitherto been taken in Connecticut or even in New England. Thus the Higby station extends the range of the species some fifty or sixty miles eastward.

I am grateful to Mr. C. A. Weatherby for identifying the plant.—Hugh Savage Clark, Lancaster, Mass.

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Fernald. Bot. Lab.

Rhodora

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 28. May, 1926. No. 329.

PLANTS GROWING THE FIRST SEASON IN AN UNCOVERED CELLAR.[1]

JOHN ROBINSON.

THE South Church, at the corner of Chestnut and Cambridge streets in Salem, Mass., was burned on the evening of December 19, 1903. The entire upper portion of the building was destroyed but the main floor was not burnt through to any extent, so that, neither in the church itself, nor in the vestry immediately at the north of the church, which was also burnt, did fire extend into the cellars. Both cellars had ordinary earth floors. The church cellar was seventy-five by sixty-five feet; the vestry was fifty-three by forty feet. The two cellars were separated by a space—never dug out—fourteen feet in width, over which a wooden connection from the church to the vestry was built a number of years ago. The church was erected in 1804, no external changes of any importance having been made in it afterward. An old vestry was replaced by a new one some fifty years since, practically upon the old cellar. Thus, neither cellar had ever been open to the light and air since the first construction of the buildings and there had never been any vegetation in either of them. After the fire, the remains of the church and vestry and all of the rubbish were

[1] [In publishing this posthumous paper of Mr. John Robinson, RHODORA acknowledges indebtedness both to Prof. A. P. Morse who, in preparing a bibliography of Mr. Robinson's writings, came upon the manuscript and brought it to our attention, and to the Librarian of the Essex Institute at Salem, Massachusetts, for permission to print the paper, which was deposited in that establishment by Mr. Robinson Jan. 27, 1908. It has seemed best to leave the flora in its original form rather than to make any attempt to modernize its arrangement or nomenclature. Mr. Robinson's observations, of a kind rarely recorded in such detail, show clearly the rapidity with which exposed terrain is invaded by adjacent vegetation.—Ed.]

cleared away, but not until late in the spring of 1904 was either cellar bottom fully exposed to the sun.

These cellars were quite carefully examined on October 14 and 17, 1904, when the plants given in the following list were collected. The list is interesting as showing what a large number of species had appeared in so short a time—five months—in a place where no plants had ever grown before, and also, as showing how quickly certain plants will attain perfection from the seed and to what extent other seedlings will develop in one short season. At the time the collection was made the entire cellar of the vestry was well covered with vegetation, the larger cellar of the church was not so fully covered. No plants were recorded except those from the old cellar bottoms; the covered space between the cellars was disregarded.

As to the source of the seeds: The church was in the center of the residential portion of the city with yards and gardens in the immediate neighborhood from which the wind and birds undoubtedly carried seeds, and fruit of one sort and another was probably thrown into the cellars by persons passing on the streets during the summer. It is quite probable that rubbish had been put in the cellars at various times, including faded flowers from the church decorations. There are few plants in the list which may not be accounted for by one of these suppositions.

In preparing the list there seemed to be no reason for separating the plants found in one cellar from those in the other as the conditions were practically the same in each case. The nomenclature follows that of Britton and Brown's Flora of the Northern States and Canada.

Peabody Museum,
Salem, Mass., Oct. 1, 1908.

List of Planys collected in the Cellars of the South Church and Vestry, October 14 and 17, 1904.

Ranunculaceae

Delphinium (species). Garden Larkspur. Plant 4 inches high.

Cruciferae

Bursa bursa-pastoris. Shepherd's Purse. Flowering plants.

Caryophyllaceae

Alsine media. Chickweed. Flowering plants.

Cerastium viscosum. Mouse-ear Chickweed. Flowering plants.

Portulacaceae

Portulaca oleracea. Purslane. Flowering plants.

Malvaceae

Malva rotundifolia. Common mallow: Cheeses. Flowering plants.

Geraniaceae

Geranium robertianum. Herb Robert. Small plants.
Oxalis stricta. Yellow Wood-Sorrel. Flowering plants.

Anacardiaceae

Rhus hirta. Staghorn Sumac. Plant 1 foot high. Fruiting tree in near-by garden.

Vitaceae

Vitis (species). Native Grape. Plant 6 inches high.
Vitis (species). Foreign Grape. Plant 4 inches high.

Rhamnaceae

Rhamnus cathartica. Buckthorn. Plant 4 inches high. Fruiting tree in adjoining estate.

Sapindaceae

Acer rubrum. Red Maple. Plants 3 inches high. Fruiting trees in streets near the church.

Leguminosae

Trifolium pratense. Red Clover. Flowering plants.
Trifolium repens. White Clover. Flowering plants.
Trifolium hybridum. Alsyke. Flowering plants.
Medicago lupulina. Black Medick. Flowering plants.

Rosaceae

Spiraea vanhoutii. A garden Spiraea. Plants 4 inches high. Grown in gardens about the church.
Fragaria (species). Strawberry. Small plant.
Rubus odoratus. Purple Flowering Raspberry. Plant 4 inches high. Grows in adjoining gardens.
Rubus idaeus. Garden Raspberry. Plants 6 inches high. Grows in neighboring gardens.
Rubus strigosus. Blackberry. Plant 1 foot high.
Pirus malus. Apple. Plant 8 inches high.

Pirus aucuparia. Mountain Ash. Small seedling, growing to quite large size the next year. Trees near by.

Umbelliferae

Conium maculatum. Poison Hemlock. Many plants in full flower 2 feet high. Never noticed in the neighborhood.

Compositae

Aster tradescanti. White Aster. Flowering plants 14 inches high. Probably from church floral decorations.

Leptilon canadensis. Horse-weed. Flowering plants 4 feet high.

Erigeron ramosus. Daisy Fleabane. Flowering plants 2 feet high. Grows in gardens in the neighborhood.

Solidago canadensis. Golden-rod. Flowering plants 3 feet high. In neighboring gardens.

Euthamia graminifolia (*Solidago lanceolata*). Bushy Golden-rod. Small plants, flowering the next year. Not noticed in the neighborhood.

Ambrosia artemisiaefolia. Roman Wormwood. Flowering plants 14 inches high.

Bidens frondosa. Beggar-ticks. Flowering plants. A common weed in near-by gardens.

Chrysanthemum leucanthemum. Whiteweed. Large plants. Often used in church decorations.

Erechtites hieracifolia. Fireweed. Flowering plant 3½ feet high.

Senecio vulgaris. Groundsel. Flowering plants.

Arctium lappa. Burdock. Plants 4 feet in diameter, not flowering.

Taraxacum taraxacum. Dandelion. Many large plants in flower.

Labiatae

Galeopsis tetrahit. Hemp Nettle. Seedling plants 8 inches high. Not noticed in neighborhood.

Solanaceae

Solanum dulcamara. Bittersweet, Nightshade. Small plants, flowering in 1905.

Solanum tuberosum. Potato. Plants 14 inches high.

Lycopersicum esculentum. Tomato. Plants 1 foot high.

Petunia nyctaginiflora. Petunia. Plants 14 inches high. Common in gardens of the neighborhood.

Chenopodiaceae

Chenopodium album. Pigweed. Many flowering plants, one 7 feet high.

Chenopodium hybridum. Maple-leaved Goosefoot. Flowering plants 2 feet high.

Amaranthaceae

Amaranthus retroflexus. Amarantha Pigweed. Flowering plants 2 feet high.

Plantaginaceae

Plantago major. Plantain. Flowering plants.

Verbenaceae

Verbena urticifolia. White Vervain. Flowering plants 3 feet high. Not noticed in neighborhood.

Polygonaceae

Polygonum aviculare. Knotgrass. Flowering plants.

Rumex obtusifolius. Bitter Dock. Plants, not in flower.

Rumex acetosella. Field Sorrel. Plants, not in flower.

Urticaceae

Ulmus americana. American Elm. Plants 1 foot high.

Ficus carica. Fig. Many plants, one 14 inches high. Appears to be a remarkable growth from fruit thrown into the cellar.

Betulaceae

Betula alba (?) White Birch. Plant 14 inches high. Forms of the White Birch grow in neighboring yards and gardens.

Salicaceae

Salix discolor. Pussy Willow. Plants 1 foot high.

Salix (species). Plant 1 foot high.

Populus tremuloides. American Aspen. Plants 2 feet high. Not observed in the region.

Populus grandidentata. Large-toothed Aspen. Plant 14 inches high, leaves very large. Not observed in the neighborhood.

Liliaceae

Asparagus officinalis. Asparagus. Many plants 1 foot high. Probably from church decorations.

JUNCACEAE

Juncus tenuis. Small Rush. Flowering Plant. Sometimes found in damp gardens in neighborhood.

Juncus (species). Bog Rush. Plants 1 foot high, not in flower.

CYPERACEAE

Carex muricata. Sedge. Flowering plant.

Carex mirabilis (?). Sedge. Flowering Plant.

Cyperacea (species). Sedge. Plant, not in flower.

GRAMINEAE

Phleum pratense. Timothy Grass. Flowering plants.

Agrostis alba vulgaris. Red-top. Flowering plants.

Muhlenbergia mexicana (?). Drop-seed Grass. Not in flower.

Muhlenbergia tenuiflora. Drop-seed Grass. Flowering plants.

Poa annua. Low Spear-Grass. Flowering plants.

Eragrostis pilosa. Tufted Eragrostis. Flowering plants.

Avena sativa. Oats. Flowering plants.

Panicum capillare. Old Witch Grass. Flowering plants, some 3 feet high.

Syntherisma sanguinale. Finger Grass. Flowering plants.

Ixophorus viridis. Green Foxtail Grass. Flowering plants.

Zea mays. Indian Corn. Plants 6 inches high.

Undetermined species of garden shrub. Seedling plant 3 inches high.

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TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND

M. L. FERNALD

(*Continued from page 65.*)

There was still plenty to do nearer home but Miss Priest had collected Thrift, *Statice labradorica*, at Sandy Cove and Long was anxious to add that to his already extended list of "seen-for-the-first-timers." When we passed the hospital Miss Meister had not yet started, so we detailed Dunbar to help carry her bags as far as our roads coincided and Long and I headed for Sandy Cove, vowing to keep our eyes shut

to anything which might tempt us from the path. It was "a clever mornin'," so clear that the red cliffs of southern Labrador stood out sharply across the Straits and, although ten or twelve miles away, their strata showed with diagrammatic sharpness. The roadside swales and peaty barrens were a brilliant patchwork of color: great white, cottony clumps of *Salix candida* Flügge; acre upon acre of the superb blue-violet flowers of *Iris setosa* var. *canadensis* Foster, with here and there clumps of intenser color and some almost white; Butterwort, *Pinguicula vulgaris* L., so like a violet in superficial appearance as constantly to deceive us; the three Primroses, the lilac *Primula farinosa* in many forms, the pink or white *P. mistassinica* Michx. and the smaller white *P. egaliksensis;* pink or crimson racemes of *Pyrola asarifolia* var. *incarnata* (Fisch.) Fern.; white flowering and bright-red fruiting racemes of Bog Asphodel, *Tofieldia glutinosa* (Michx.) Pers., and greenish-white spikes of the tiny *T. minima* (Hill) Druce; uncounted thousands, perhaps millions of deliciously fragrant milk-white wands of "Scent Bottle", *Habenaria dilatata*[1]; more delicate aromatic racemes of "Hyacinth," *Smilacina trifolia* (L.) Desf.; great gardens of trim *Anemone parviflora* Michx., with lustrous and handsome foliage and really large, rather than small, widely spreading white sepals tinged outside with blue. These and many others which had not lost their charm crowded the sides of the road but, having collected them, we were able to keep to the straight and peaty path toward Sandy Cove.

But when, slightly before we reached Savage Cove, a few triangular fronds of a wonderfully delicate fern attracted our attention in the roadside thicket, the temptation was too much for us. I had already grown familiar with but not hardened to *Cystopteris montana* (Lam.) Bernh. in the Shickshocks, but it is not a fern to neglect, and Long had never seen it; besides, it was new to Newfoundland. So we were soon botanizing the openings in the spruce thicket near Savage Cove, fascinating springy and mossy glades full of the Cystopteris, the moss-like *Selaginella selaginoides* (L.) Link, the flexuous black-topped *Carex atratiformis* Britton, *Listera convallarioides* (Sw.) Nutt. with watery-amber racemes and *Salix vestita* Pursh, one of the most beautiful of willows, with deeply rugose rounded leaves dark green above but white beneath with a dense silk.

[1] One girl, when asked the name of this deliciously fragrant orchid, replied: "We calls it 'Scent Bottle' and some folks calls it 'Smell Bottle,' but that ain't the right name; the right name's 'Water Lilies'."

After repeatedly tearing ourselves away from such spots, which must wait until next time, we reached Sandy Cove and we knew at once where *Statice* grew, for east of the village there rose a bare ridge of whitish limestone pavement and gravel; and we made directly for it. At the foot we stopped for *Taraxacum ceratophorum* (Ledeb.) DC., new to our series of Newfoundland species. In the border of a little pool *Carex bicolor* All. was growing, very scarce but certainly it, a European species for which we had but a single American station (on Ingornachoix Bay). Through the prostrate mats of "Soapberry," *Shepherdia canadensis*, "Blackberry," *Empetrum nigrum* L., and Fly Honeysuckle, *Lonicera villosa*, and the various arctic willows, scattered plants of *Habenaria viridis* were projecting, short "chunky" little plants with large green or greenish purple flowers, the plant which Miss Priest had added to the known flora of North America. When we had satisfied ourselves with the lower slope and the shore and had reached the upper level of the barren it was 5 o'clock, and we were due at supper at Parson Richards's at 6:30. Long and I had been reinforced by Dunbar after he had violated Straits custom by helping a woman carry a heavy load.

On the Straits the men are inclined to hold to the archaic notion of women and they seem mildly surprised and perplexed when a "Grenfell girl" from the outside intimates that, instead of walking empty-handed while "the woman" lugs the load, they should change the programme. It is not unusual to see a young blade loafing about the kitchen with his pipe in his mouth, while the young girl who has promised to be or who has already become "his woman" uncomplainingly tugs in two pails of water at a time from the distant spring, brings in the coal and the wood, tends the cows and the garden-patch and, of course, does the housework. Perhaps the women of the Straits, who also work outdoors at the fisheries and are a hardy and healthy type, would resent any modernization of ideas, but the "Grenfell girls" and the doctors are setting them a new example.

It was 5 o'clock and we were due at Flower Cove at 6:30; but we had to collect some *Statice* and the turfy slopes about the little rock-crests were brilliantly rosy-purple with *Hedysarum alpinum* L., *Epilobium latifolium* L. and an *Oxytropis*. It took time to dig and clean these but at 5:45 we quit, wondering whether we could possibly cover the four miles of ledgy and peaty path and have time to get out of our seal-skin Straits boots (made after the Esquimaux or "Huskimaw"

fashion) and flannel shirts and be dressed to go out to tea in forty-five minutes. But Long called a halt! From the deep crevices at the crest he was extracting a strange Crucifer and Parson and Mrs. Richards would have to forgive our tardiness—for any species of the arctic genus *Braya* in this latitude is rare; in fact, we knew of only one species and this was something entirely distinct.

It was a great supper: delicious soup, lobster, hot rolls, delicate vegetables, cakes and preserves, and Mrs. Richards most tactfully hid her surprise at our ravenous appetities; but we were getting real "home food." The ordinary fare of the Newfoundland fisherman is calculated for a hardy race; but we were fresh from indoor and inactive city life and had found the great helpings of dough-balls, salt pork, boiled bones, leathery cabbage and dried peas a little overwhelming—plenty of calories but pretty hard on untrained digestions. To be sure, the people of the Straits, through the efforts of the Grenfell Mission, have learned to value lettuce and greens and Mrs. Whalen makes the most delicious of whole-wheat bread; and, as one of the big traders who supplies these ports told me, "the folks at Flower Cove are the most extravagant in the colony. They ain't willin' to live like their grandfathers. Why, we sell them more prunes and dried apricots and other luxuries like that than anywhere else in the colony." But the Newfoundland fisherman's dinner on Sunday, the day of puritanic inactivity (like that of week-days only more of it, with an ultimate plum pudding or currant duff) seems calculated to distend the stomach for the whole of the coming week[1]; and when, late in August, we left the island, we agreed that we should never again dare look a cabbage or a pig directly in the eye!

The signal at Point Amour, across the Straits, had sounded and everyone from Eddies Cove to Deadman's Cove knew that the "Glencoe," returning from Battle Harbor, had passed Forteau; so, when she appeared at the entrance to the harbor we were all ready to be taken out by the small boat to board her. Capt. Norman used to bring the "Home" up the narrow channel, with barely room to turn, to the wharf; but Capt. Blanford, substituting with the much larger

[1] Changes come slowly in this region. The late A. S. Packard, landing on the opposite shore in 1860, wrote: "Accepting our hostess's kind invitation to take dinner, we sat down to a characteristic Labrador midday meal of dough balls swimming in a deep pot of grease with lumps of salt pork, without even potatoes or any dessert; nor did there seem to be any fresh fish. The staples are bread and salt pork; the luxuries game and fish; the delicacies an occasional mess of potatoes, brought down the St. Lawrence once a year in Fortin's trading schooner."—Packard, *The Labrador Coast*, 75 (1891).

and finer "Glencoe" (with a complement of 30–40 officers and men) was cautious and refused to risk the passage. We did not wish to leave the Straits but, naturally, we could not dodge the plain fact that we had come to Newfoundland to botanize about Trepassey at the opposite corner of the island, fully 350 miles to the southeast.

We left Flower Cove in the afternoon but a heavy wind was blowing and one of the officers informed us that the "Glencoe" "hadn't had a civil day the whole trip," and, when we put into the sheltered harbor of St. Barbe, it was decided to tie up at the wharf there, hoping the wind would go down with the sun. So, promptly after supper, while some of the officers went trouting up one of the brooks, we started a botanical reconnaissance of St. Barbe Bay. There were only three or four hours of daylight, but they were enough for us to pick up a few things we had not been seeing: *Poa trivialis* L., here, as elsewhere in Newfoundland, native of spring-heads and rills, *Botrychium virginianum* var. *laurentianum* Butters, with heavier and coarser sterile fronds than ours, and *Osmorhiza obtusa* (C. & R.) Fern., which Miss Priest had collected at Flower Cove; and we extended slightly southward the ranges of a few species.

Shortly before daylight we roused slightly as the "Glencoe" left St. Barbe and almost before we were asleep again we were wide awake, puzzled by the grinding noise under our stateroom and a terrific list from which the ship did not recover. It took no time to get on deck and to see that the splendid "Glencoe" was hard aground on a submerged ledge near the Dog Peninsula or "Dog Pen"; and those who knew that we had begun our trip with a train-wreck were inclined to look upon us as hoodoos. We did not confide to them, that our consciences still whispered that we were being further punished for abandoning southeastern for northwestern Newfoundland. All attempts to drag the steamer off by means of anchors and cables set at various angles proved futile, and toward night, as a gale was springing up with a prospect of seriously racking the "Glencoe," all passengers were taken in life-boats to the nearest settlement, Brig Bay. It is no small matter for a fishing community of half a dozen families to house thirty-five or forty half-ship-wrecked people suddenly thrust upon them, especially since, as they all said on this coast, "there are no fish; so what's the use of going out for them?" But they rose to the situation and tucked us all away and they had at least plenty of bread and butter and tea. On this diet we had less "pep" than if we had

been able to get some fresh fish or even some smoked caplin (the dog's food in winter); but we had an interest which kept us fully occupied and, since we hoped never again to be marooned at Brig Bay (after the first night we called it Bug Bay), we seized the opportunity to collect every plant of interest there and we ate every wild berry within a radius of a mile.

On the upper border of the beach, in dry limestone-shingle, there was a strange grass, in habit like *Poa alpina* L., but more densely tufted and with tiny panicles, the European *P. alpina* var. *frigida* (Gaudin) Reichenb. On the limy rock-barrens and in the adjacent swamps we were able to extend southward the ranges of several species, including *Carex microglochin* and *Gentiana propinqua;* and we here established new northern limits for *Carex sterilis* Willd., *C. Hostiana* var. *laurentiana* Fern. & Wieg., *Parnassia parviflora* DC., *Scutellaria epilobiifolia* Ar. Hamilt. and *Antennaria straminea* Fern. The two "Plumboys," *Rubus arcticus* and *R. acaulis,* were both fruiting and we were much interested in making a comparison of the two, the former with coarse drupelets and large stones, the latter with more numerous and smaller drupelets and stones and a rich flavor, superior to that of any of our other raspberries. *Arenaria cylindrocarpa* Fern. was in the mixed clay and limestone gravel, creeping extensively among the stones and throwing up at irregular intervals moss-like tufts of short leafy branchlets with terminal olive-brown capsules; and most of the more generally distributed specialties of northwestern Newfoundland abounded: *Carex glacialis, Salix reticulata* and *vestita, Betula microphylla* Bunge, *Comandra Richardsiana* Fern., *Draba incana* L., *Epilobium glandulosum* Lehm.; and *Gentiana nesophila,* the largest plants we have ever seen, 2.3 dm. high, with flowers 5 cm. long, likewise the tiniest, 2 cm. high, with fully mature flowers only 1.2 cm. long, a range of variation which defies the maker of an artificial key.

So we kept fully occupied until Thursday evening when, at about 6 o'clock, the "Prospero" arrived from the northeast side of the island, quickly pulled the "Glencoe" off the ledge and as quickly steamed away; and when we saw our steamer again afloat and anchored off Plum Point, we stranded passengers chartered the motor-boats of Brig Bay and promptly returned to the "Glencoe." The crew were not really ready for us and we immediately transferred much of the fresh paint from the retouched railings to our overcoats, but that was a minor matter compared with being back again on board and it did not

greatly disturb us that Capt. Blanford decided to tie up for the night at Plum Point. And next day, when the wind increased, Long, Dunbar and I spent our time ashore, searching the neighborhood of Plum Point for further specialties. The wind kept up all night and, since three of the four compartments of the steamer were full of water, we lingered on and the young people of all the neighboring settlements from Derby's Tickle to Bird Cove gathered for a dance on deck.

Toward morning the water became "civil" and we steamed slowly but steadily on to spend the next night tied up to the wharf at Port Saunders. When we went ashore after supper we started over the road toward Pointe Riche, where Wiegand had collected some good calciphiles in 1910. Naturally, we did not expect to get any novelties on an evening stroll over the route he had formerly covered by daylight, but the charm of the open country, the sand-dunes with a northern colony of *Ammophila breviligulata* Fern. and other dune types, the turfy and rocky limestone barrens, and the great river-like spring breaking abruptly out of the rock-terrace at Sandy Cove will never be forgotten. We made the personal acquaintance of *Tanacetum huronense* var. *terrae-novae*, with whitish feathery foliage and large solitary or paired golden buttons. At the big spring was an extensive colony of *Taraxacum latilobum* DC., an endemic species of Newfoundland originally collected by La Pylaie, perhaps at this very spot, which he must have passed in 1820 when he botanized from Port Saunders to Pointe Riche. And we extended southward the Newfoundland range of *Gentiana propinqua*, extended northward the range of *Euphrasia americana* Wettst. and brought in from a bit of boggy woods a collection of the Asiatic *Epilobium palustre* var. *mandjuricum* Hausskn., a plant not recorded from America.

When we reached Curling on August 11, our little diversion "over just one trip" had occupied twenty days, and when we reached St. John's at midnight of Wednesday, the 13th, we were nearly four weeks late. The train for Trepassey would not leave until Friday noon, so, after a rainy morning, we spent Thursday afternoon climbing the slopes of South Hill. I had been there with Wiegand in 1911, but Long and Dunbar had not, and I was quite willing to linger with them over the "Sweet Hurts" (Blueberries, *Vaccinium pensylvanicum*) "Ground Hurts" (*V. uliginosum*) and "English Blackberries" (*Rubus canadensis*) which we had missed on the Straits; and particularly over

the Atlantic European specialties. *Pedicularis sylvatica* L., with small fern-like foliage and little racemes of exquisite shell-pink large corollas, and *Potentilla procumbens* Sibth., resembling our *P. pumila* Poir., but coarser and with very heavy and deep roots, abounded in the peat and rock along the hillside rills; the coarse *Pedicularis palustris* L., with long spike-like wands of rosy-pink and deep violet flowers, filled many boggy or springy swales along Waterford River. The Heath Grass, *Sieglingia decumbens* (L.) Bernh., remotely suggesting *Danthonia*, formed dense tussocks along with the delicate *Agrostis canina.* The unique *Juncus bulbosus*, related to our coastal plain *J. militaris* Bigel., but delicate and sprawling, bordered spring-pools, the inflorescenses often proliferous and bearing long plumes of foliage. And in spruce thickets at the top of the hill, as in the boggy swales along Waterford River and in spruce woods northward toward Torbay, where Wiegand and I got it in 1911, were closely repent carpets of a *Veronica*, in foliage suggesting *Linnaea borealis*, but related to *V. officinalis*, with more delicate racemes of blue-violet, rather than lilac flowers. This plant, although characteristic of mossy swales and spruce woods of the Avalon Peninsula and collected by Wiegand and me in 1911, and also indigenous in woodlands and recent clearings on Prince Edward Island, has not heretofore been recognized as an American. It is identical with specimens from Scotland, Ireland and Wales but unlike most material of *V. officinalis* from continental Europe. Its exact identity is still to be worked out.

In our limited time I was unable to take Long and Dunbar to some of the other Atlantic European plants which are also indigenous in southeastern Newfoundland, such as Mat Grass, *Nardus stricta*, and *Ranunculus hederaceus* and *R. Flammula;* and, except, for the few species above noted, the flora of South Hill was meagre and uninteresting. The city of St. John's, likewise, is not very alluring to the stranger whose interest is not fishy, thoroughly a sea-faring town, with squalor, long rows of unpainted or only anciently painted houses, pervading odors of fish, cod-oil, seal-oil and the other maritime smells, and such hotel facilities as do not tempt the fastidious stranger to linger; so that we were glad when it was time for the train to start on Friday noon for Trepassey.

From the car-windows we were able to distinguish *Pedicularis palustris* and *P. sylvatica* and to extend their known ranges southward at least to Petty Harbor; and we were fascinated by the big bare hills

which guard the entrance to Bay Bulls. From time to time we "spotted" areas which certainly need investigation, such, for instance, as the stretch of shallow ponds and lakes south of Tor's Cove, and again in the area between milepost 34 and Caplin Bay, where we clearly saw the southern *Juncus militaris*, a species preëminently characteristic of Nova Scotia, Cape Cod, Long Island and the New Jersey Pine Barrens; and, since many of the coastal plain plants (including *Juncus militaris*) which are found on the barrens of the Exploits or about Notre Dame Bay, had never been known from the Avalon Peninsula, we naturally longed for a day in each of these areas. And as we passed Caplin Bay, Ferryland and Renews, all reputed localities for *Calluna vulgaris*, we strained our eyes in trying to detect the Heather.

The soil was right, the highly silicious Avalonian rock, hopelessly barren and desolate, with great stretches of "haith" or "mesh," but from the train we saw only the most uninteresting of plants, which are dominant on sterile areas of many sections of northeastern America: Cinnamon Fern, *Osmunda cinnamomea* L., Pasture Juniper, *Juniperus communis* var. *montana* Ait., White Top, *Danthonia spicata* (L.) Beauv., Rusty Cotton Grass, *Eriophorum virginicum* L., Hoary Willow, *Salix humilis* Marsh., Sweet Gale, *Myrica Gale* L., White Cinquefoil, *Potentilla tridentata* Ait., Fire Cherry, *Prunus pensylvanica* L. f., Indian Tea, *Ledum groenlandicum* Oeder, Lambkill, *Kalmia angustifolia* L., and the ubiquitous *Solidago uniligulata* (DC.) Porter and *Aster radula* Ait. After we had vainly tried for three hours to force enthusiasm over these and other sure indicators of soil-sterility, someone in the seat behind me remarked, "I vote for the Straits Coast," to which came the unparliamentary but sincere response, "I second the motion." And, when we had passed Cappahayden and the Red Hills and turned westward across the Rocky Moor, the anticlimax after coming from the half-hourly botanical thrills of the Straits was still more depressing; miles and miles of hopelessly barren rock-pasture, with no plants in sight more exciting than *Potentilla tridentata*, *Agrostis hyemalis* (Walt.) BSP. and *Empetrum nigrum*, and with signs of animal occupation only when a flock of beautiful brown and white Willow Ptarmigan swiftly flew away from the passing train. Dunbar, whose home is in Hancock County, Maine, where we supposed there were boulders enough, expressed the thoughts of all three of us by remarking, "The more we turn westward

toward home the farther away we seem to get!" while a Newfoundlander on the train explained to me that this is the "abomination of desolation" referred to by the prophet Daniel.

Toward twilight, after passing Portugal Cove, we came out on the shore of Biscay Bay and in a few minutes reached Trepassey, at the head of Trepassey Bay. Following the good advice of the conductor on the train we found a comfortable home with Mrs. Isaac Curtis and, after a late supper, retired with the words of Cormack's century-old label of *Calluna vulgaris* vividly in mind: "Trepassey Bay also very abundant, S.E. of Newfoundland, considerable tracts of it."

Next morning we were out bright and early and were surprised to see what an apparently prosperous town we were in; but our interest being in the rocky, gravelly and peaty barrens which stretch north and east from Trepassey Bay, we got away as promptly as possible from the settlement. During a very long day we worked across the barrens eastward to Biscay Bay and it was 10 in the evening when we got in. Nowhere had we seen *Calluna*, though "Blackberry," *Empetrum nigrum*, in some of its forms had repeatedly deceived us; and, when we told Mrs. Curtis and others of our disappointment, they were in no way surprised, for the people of Trepassey are mostly of Irish or Scotch extraction, many of them very intelligent, and they had never seen nor heard of Heather outside the "old country." In fact, the station agent, who proved to be a widely read man, assured us that in his Newfoundland travels Cormack had never been within many miles of Trepassey and any statement he had made about the region must have been based on hearsay.

Nevertheless, Trepassey has some interesting plants. At gravelly brooksides, in peaty and rocky barrens and around spring-heads with *Stellaria uliginosa* Murr., *Ranunculus reptans* L. and other such plants, was a very characteristic *Galium*, quite strange to us, but upon study proving to be the Heath Bedstraw, *G. saxatile* L. of western Europe, where, just as at Trepassey, it grows "On barren heaths and commons, and in upland pastures, borders of woods, and on rocks."[1] The European *Juncus bulbosus* abounded in some of the pools, European *Glyceria fluitans* was in the swales; and near Portugal Cove we got immature or sterile *Potamogeton polygonifolius*, a European species already well known from the region west of St. John's. Otherwise the indigenous flora of the barrens about Trepassey was made

[1] Engl. Bot. ed. Syme, iv. 219 (1873).

up of the species which probably occur through the whole breadth of southern Newfoundland from Cape Ray to Cape Race, including such typical coastal plain plants as *Schizaea pusilla*, *Lycopodium inundatum* var. *Bigelovii*, *Carex trisperma* var. *Billingsii* Knight, *Habenaria blephariglottis*, *Amelanchier stolonifera* Wiegand, *Rubus recurvicaulis* Blanchard ("English Blackberry"), *Gaylussacia dumosa* var. *Bigeloviana* Fern., and *Bartonia paniculata* var. *iodandra* (Robinson) Fern. *Carex umbellata* Schkuhr, which grew in silicious gravel, we had previously had only from central Newfoundland, and a little species of "Good-bye-Summer," with short elliptic or oval leaves, seemed strange to us, a plant afterward found all the way to Cape Ray, the endemic *Epilobium Pylaieanum* Fern. And a common weed of the hayfields, along with French Sorrel, *Rumex Acetosa* L., was the Cow Parsnip of Europe, *Heracleum Sphondylium* L., here called "Wild Parsnip," and considered a vile nuisance because of the rank flavor it imparts to the milk. As a matter of fact the plant, closely related to the indigenous *H. lanatum* Michx., might be made a boon to the region in spring and early summer when first sprouting. The new stems and leaf-stalks of the American species, boiled in salted water, are a good substitute for stewed celery and the European species is probably quite as good. Here is the verdict of Boswell Syme: "The young shoots and leaves may be boiled and eaten as a green vegetable, and when just sprouting from the ground resemble asparagus in flavour. This experiment is, however, seldom tried, owing to the ignorance of those to whom such an addition to the table would be a benefit and luxury." [1]

After our extremely long Saturday we were slow to get up on Sunday, particularly as it rained and we had all contracted "devil's grip," a particularly debilitating infection which was running through the region. We were, consequently, not specially enthusiastic about putting up the extensive collections of the day before, but by night they were all in press. As we planned to go from St. John's to Bonaventure to search for Cormack's *Arbutus Unedo*, it was necessary for us to return to St. John's from Trepassey on Monday morning. But during the trip back our physical condition and our experience of Saturday with one of Cormack's records influenced us to modify the plan. We knew that the rocky hills at Bay Bulls looked interesting, there was a well recommended small hotel there and the trip to Bona-

[1] Engl. Bot. ed. Syme, iv. 155 (1873).

venture and back would kill nearly a week, so we decided to stop off at Bay Bulls, at least to see what the region was like.

Mrs. Williams's little hotel proved to be what we had not seen since Mrs. Billard's at Port aux Basques, a comfortable place with juicy roasts, plenty of vegetables and good milk and, in our weakened condition, we settled right down and promptly dismissed Bonaventure from the programme. The region was of the hopelessly sterile silicious Avalonian rock, as elsewhere from St. John's to Cape Race and Trepassey, and the flora was not specially different. Several of the Atlantic European plants which we had seen on South Hill but not at Trepassey were here: *Sieglingia decumbens*, *Agrostis canina*, *Carex leporina* L., *C. Oederi* Retz. and the little variety of *Veronica officinalis;* and in the turf on the high hill[1] at the northern entrance to the harbor the American *Carex umbellata* and *C. novae-angliae* Schwein., both very rare in Newfoundland, grew with *Sieglinga;* while in boggy swales the European Manna Grass, *Glyceria fluitans*, and typical European *Carex muricata* L. (*C. stellulata* Good.)[2] abounded with *Epilobium nesophilum* Fern., endemic to Newfoundland and the Magdalen Islands. But on the whole the region was a disappointment and we again went through our formula: "I vote for the Straits Coast," followed by "I second the motion!"

It was now time to start home and, since we were all averse to the tedious and, as we knew from experience, dangerous return across the island by rail, we decided to go by steamer from Argentia along the south shore of the island to Port aux Basques and, incidentally, to see a new strip of coast. The "Portia" would not sail until Tuesday so, rather than wait over in St. John's, we went Sunday afternoon, August 24, to Whitbourne, there to await the boat-train of Tuesday. Whitbourne is an old botanical center; Robinson and Schreck collecting there in 1894, Wiegand and I in 1911 and Williamson in 1912. Consequently, we expected to get nothing new but we should at least be in the open country. Our expectations were in the main fulfilled, but our time at Whitbourne was interestingly occupied in botanizing two of the sand-bottomed ponds, where we collected again the specialties of the region: *Thelypteris palustris* Schmidel, *Isoëtes Tuckermani*

[1] On our labels we called this Joan Plains Hill, the nearest name we could hit upon from the pronunciation. When we inquired the name of the hill and finally asked the spelling we received the cryptic reply: "'How do you spell it?' My land! Here I've lived in Bay Bulls thirty-five years and I never heard a question like that. 'How do you spell it?' My land!"

[2] See Mackenzie, Bull. Torr. Bot. Cl. l. 346 (1923).

A. Br., *Sparganium americanum* Nutt., *Sagittaria graminea* Michx., *Elatine minima* (Nutt.) Fisch. & Meyer, *Sium suave* Walt. and *Gratiola aurea* Muhl., all common enough northeastward to Nova Scotia but rare in Newfoundland. But our chief interest was in securing an abundance of heavily fruiting *Littorella americana* Fern., a very rare species which is little known in fruit. Wiegand and I got good flowering material in 1911 but in 1924 the plant formed a close and often continuous fruiting turf along one margin of Goose Pond and we amused ourselves cutting thin sections of the turf and fingering out the fine gravel from the sod; but even now, nearly two years later, bits of gravel still rattle out in the herbarium.

The "Portia" was due to sail from Argentia Tuesday, but when we got there she was still loading, so we put in the afternoon exploring the sandy flats and brackish pools, not too far away from the wharf. There we got *Salicornia europaea* var. *prostrata* (Pall.) Fern., which we had known in Newfoundland only from Bay St. George; and, best of all, there were *Suaeda Richii* Fern., a characteristic species of eastern New England and adjacent Nova Scotia but not previously found in Newfoundland, and the more widely dispersed *Tillaea aquatica* L., also new to the island.

When we got back to supper a gale was blowing and the "Portia" was destined to stay at the dock overnight. In the morning, Long and I attempted further explorations but were nearly blown over a headland and returned, constantly fighting the wind, to spend the rest of the day working over our presses and watching the loading of a freight-car with silver ore from the mine at Argentia, now starting to the smelter at Swansea in Wales. We were riding out the tropical hurricane which, we afterward learned, had been destroying shipping, houses and trees all the way from the South Atlantic States to southern Newfoundland and, after passing through a train-wreck and the grounding of a steamer, we had no wish for the *tertium quid*, so we approved the wisdom of the captain in taking no chances. By night the wind had quieted and we put across Placentia Bay. It was a clear and brilliant evening, the "Portia" confidently took the magnificent swell and all hands gathered on deck to watch the breakers dash, often more than one hundred feet, over the cliffs; but finally the deck grew too wet and everyone disappeared inside. Long and Dunbar sought our stateroom, but I was content to stop at the first lounge in the upper cabin; there was more air and the deck-rail was conveniently near.

By morning we were at Burin and during the day, as we passed between Lamaline and the French islands of St. Pierre et Miquelon and entered Fortune Bay, our minds were constantly on Bachelot de la Pylaie, who more than a century ago lived at St. Pierre and botanized this coast and the hills back of it, and we naturally wondered again and again where he had found *Calluna* and just which of "les points culminans produisent . . . le *Hudsonia cricoides*." But we got no chance to investigate; the "Portia" attended strictly to business and made only the shortest of stops at small ports where botanizing might be possible, but tied up for hours at the large towns, like Grand Bank, where botanizing was out of the question. At Harbor Breton the wharf was sufficiently near natural and unspoiled open country for us to make a dash, and we brought back from a fresh pool *Limosella aquatica* L., a characteristic plant of Europe and western America but in eastern America heretofore known only from the southeastern corner of the Labrador Peninsula.[1] The great rock walls about Gaultois, Rencontre, Francois, La Poile and Rose Blanche were fascinating, and we yearned to get ashore long enough to give them a full examination; and, in the region back of Burgeo great white sandy hills attained almost montane height and a sportsman who came aboard told us that these sandhills extend many miles into the interior. It consequently required but little exercise of the imagination to picture La Pylaie and perhaps Despreaux and other companions crossing over from St. Pierre and here ascending "les points culminans" on carpets of *Calluna*, *Corema* and *Hudsonia*, and in the wetter spots gathering *Carex remota*, *Juncus acutiflorus* and *J. scirpoides*, the sight of any of which would thrill the modern student of the Newfoundland flora. But we had to be content merely with snatching a few species at each landing, mostly the ordinary types of any granitic region from Maine to Labrador; and, when we reached Port aux Basques on Sunday in time for the "Kyle" homeward bound, we had seen enough of southeastern and southern Newfoundland so that, when one of us feelingly remarked, "I vote for the Straits Coast," the others as feelingly responded, "We second the motion!"

(To be continued.)

[1] See Fernald, Rhodora, xx. 160 (1918).

Erucastrum Pollichii in Maine.—In Rhodora, xxvi. 22–23 (1914), Dr. S. F. Blake gives several references to the finding of *Erucastrum Pollichii* Schimp. & Spenn. Apparently it has not been reported from Maine. Last summer on the 11th of July, I found two or three plants of this species growing very luxuriantly at Rockland in that State. They were on the wharf from which the Mount Desert boat starts, at the end of freight branch of the railroad. *Brassica*, *Sisymbrium*, and other yellow-flowered weeds give a sunshine effect all about this locality. On examining the Herbarium of the New England Botanical Club, I find no specimens of the *Erucastrum* from Maine.—Nathaniel T. Kidder, Milton, Massachusetts.

Three Plants of Plymouth, Massachusetts.—The writer spent the week-end of September 12th, this year collecting in the inland parts of Plymouth, Massachusetts, about numerous sandy ponds. The water-level was very low, many of the smaller ponds having completely dried up. This condition of drought had caused a marked change in the flora, from previous seasons.

Three plants as determined by Professor Fernald happen to be of particular interest: of these, *Eupatorium leucolepis* T. & G., and *Scirpus debilis* Pursh, var. *Williamsii* Fernald are both rare and local in eastern Massachusetts, while *Psilocarya nitens* (Vahl) Wood has not hitherto been reported from New England.—Lyman B. Smith, Winchester, Massachusetts.

The date of the April issue (unpublished as this goes to press) will be announced later.

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TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND

M. L. Fernald

(*Continued from page 87*)

Part II. Journal of the Summer of 1925

(Plates 153–155)

We did not have to draft a party to botanize the Straits Coast of Newfoundland in 1925. Long and I already knew the endless possibilities of the region; Wiegand, who had been with me on two of my five trips to the island, was ready to return; Ludlow Griscom had tested western Newfoundland, from Bay St. George to Bay of Islands, and had seen the coast farther north and, consequently, needed no urging to join the party for his July vacation; and Stanley Pease, who had been with me on two early trips to Gaspé, with Long and me in Nova Scotia and with Griscom and me on the Mt. Logan trip of 1923, was ready to go also for July. I was fortunate in securing aid from the Milton Fund for Research at Harvard and Wiegand had a similar grant from Cornell; so we were able to take two student-assistants. Dunbar, unfortunately, was unable to go, so I selected Frank A. Gilbert, Jr. and Wiegand took Neil Hotchkiss.

Long and I had estimated, after our experience of 1924, that simply to touch the flora of the Long Range and of the West Coast would require 10 expert collectors 50 years of close botanizing, since our experience coincided with Wiegand's and mine in 1910 and with Mackenzie's and Griscom's, that practically every cranny has an isolated or endemic specialty. Already Curtiss and Lunt (1912) had got a few of the specialties of the Cod Roy region; Mackenzie and Griscom had taken the cream of the flora of Cape St. George; LaPylaie and

many others had botanized the head of Bay St. George; three parties had been on Table Mountain at Port-à-Port; many parties had done the simplest and most obvious things about the Bay of Islands; three parties had already looked at the easiest mountains of Bonne Bay; Wiegand had had a few days at Cow Head; La Pylaie and our earlier parties had sampled the shore of Ingornachoix Bay and we had very slightly sampled the southwestern shore of the Straits. But when the sharp-edged tablelands with their V-shaped gulches, forming a vast range 300–350 miles long and perhaps 15 miles broad, were taken into account and when we saw from the steamer most interesting areas of foreland and islands quite unknown to the botanist, the little excursions already made into western Newfoundland seemed very little indeed and we had visions of our party of 1925 penetrating in pairs or trios many untouched mountain-ravines.

But north of St. Paul's Inlet the Long Range recedes from the coast and gradually becomes visible only as a distant range of hills; and its only considerable spur approaching the coast north of Parsons Pond is on St. John Bay where the Highlands of St. John, with long east-and-west axes, present steep limestone escarpments, rising 1900 feet from the Gulf, the South Summit of the charts locally known as Doctor Hill, the North Summit as Bard Harbor Hill. North of that are lower wooded ridges, but from St. Margaret's Bay to the Straits the whole coastal region is essentially flat.

All being fresh from sedentary city life, we had planned, before undertaking a strenuous campaign in the unmapped mountains, with the necessary heavy packing and the endless tugging through pucker-brush, to harden ourselves by botanizing a few days in the level region near Flower Cove. So, after spending the forenoon unpacking and organizing at Mrs. Whalen's (Aunt Eliza's), where we had practically the whole house, including a fine kitchen-range for drying our paper, we started out on Friday afternoon, July 10, for our first collecting of the summer in the immediate neighborhood. The season had been very backward, flocks of icebergs lingered in the Straits and the spring-flowering species were just out, many willows, violets (*Viola nephrophylla* Greene and *V. labradorica* Schrank), "Wild Hyacinth" (*Smilacina trifolia*, deliciously fragrant) and the various Drabas (*Draba incana* L., *rupestris* R. Br., *hirta* L. and *megasperma* Fern. & Knowlt.) and Saxifrages (*Saxifraga oppositifolia*, *aizoides*, *Aizoon* and *caespitosa*).

In groups of two, three or four we scoured the country for four days, eastward to Sandy Cove, southward to Ice Point in St. Barbe Bay and as far as a mile from the shore back of Savage Cove. The specialties which Long, Dunbar and I had got in 1924 were, of course, still interesting, particularly as we could now secure in anthesis species formerly collected in fruit; and Long and I were a bit chagrined by the number of conspicuous plants now making a brave show, which we had previously quite overlooked. Practically all turfy or springy areas were white with the arctic cress, *Cardamine pratensis* var. *angustifolia* Hook., which we had never known from south of northernmost Labrador,[1] or golden-yellow with mats of the arctic-alpine *Potentilla alpestris* Hall. f., a species of the European alps, Greenland and northern Labrador which Wiegand had got in fruit on Pointe Riche in 1910 and Mackenzie and Griscom had found on Cape St. George. So abundant did it eventually prove to be wherever we went, eastward to Cape Bauld, southward to St. John's Island, that it easily takes rank as one of the common species of northwestern Newfoundland. *Carex bicolor*, too, which was so very rare the year before, soon became a sort of joke, for it was brought in by every party and proved to be of general range, though always somewhat localized, in wet depressions or along rills in the limestone gravel eastward to Pistolet Bay and south to Ingornachoix Bay; and *Comandra Richardsiana* Fern., which in 1924 was practically all sterile, was flowering profusely and was everywhere characteristic of peaty knolls in the tundra or of turfy borders of limestone gravel-barrens. The "chunky" little variety of *Habenaria viridis*, which Miss Priest had found, proved to be dominant and growing by thousands, especially on turfy or peaty borders of beaches or on turfy slopes near the sea, always associated with extreme boreal species. We began collecting a series in all stages from bud to fruit and we gradually extended the range of the plant eastward to Pistolet Bay. A detailed study subsequently shows that in its technical characters this common plant of northern Newfoundland is exactly intermediate between true *H. viridis* of Europe and the eastern American and eastern Asiatic *H. bracteata* Muhl. and that outside Newfoundland it is found from Bering Strait southward along the Rocky Mountains. It will be further discussed in Part III.

Another orchid which promptly challenged attention was *Habenaria*

[1] See Fernald, Rhodora, xxii. 14 (1920).

obtusata (Pursh) Richardson. This ordinarily unvarying plant of mossy woods was very variable along the Straits, the most characteristic extreme being a plant with crowded flowers and a yellowish tone, thus suggesting *H. clavellata* (Michx.) Spreng., instead of having the loose raceme and green color of the wide-ranging *H. obtusata*. We consequently devoted much attention to this series and it has been necessary to set off as a variety the plant with crowded racemes; and in the course of this study it has become apparent that one of the rarest orchids of Europe, the little plant of Finmark in arctic Scandinavia, which, since its discovery nearly a century ago by Blytt, has there passed as *H. obtusata*, is a very distinct, but heretofore unrecognized species.

On a visit to the Rock Marsh, Griscom, Gilbert and I found the little orchid known in America as *Malaxis monophyllos* (L.) Sw. or *Microstylis monophyllos* (L.) Lindl. so abundant in a springy swale that it would have been possible to collect many thousands of specimens. When we first came across the plant, in Newfoundland confined to the limestones of the West Coast, it was only in bud, but later in the season a good series in flower was secured, including occasional individuals with two leaves instead of the conventional solitary one. And the most interesting thing about it is that, when the plants are carefully studied, although they are quite like the plant of continental eastern America, they stand out from the Eurasian *Malaxis monophyllos* on practically every character. Most significant is the fact that the Eurasian plant has the flowers resupinate or up-side-down, so that the lip points up; while in the plant of eastern America the flowers are in normal position, with drooping lip. Asa Gray recognized this difference in 1835 when he described the American species as *Microstylis brachypoda*. Subsequent students of the orchids seem never to have compared the flowers of these plants, and for ninety years Gray's youthful discovery has been quite overlooked; even the name, which appears in *Index Kewensis*, being ignored in Ames's *Enumeration of the Orchids of the United States and Canada* (1924). The characters of the two species will be further elucidated in Part III.

One party, then another, proceeded to find in the dryish tundra a Coral-root which was perplexing—and very tantalizing, since it was always found as a solitary individual or in one case, when Pease and Griscom brought it in from the tundra back of Big Brook, as two plants. It did not look like *Corallorrhiza trifida* Chatelain, the small

early-flowering species found generally over Newfoundland and across Canada and the northern States. *C. trifida* in the flowering condition is yellowish or yellowish-green, its flowers yellowish or merely with purple-tipped sepals and with a white lip, which is without coloring except for a few somewhat indefinite basal spots of purple, and the column is strongly bent forward. The plant which was troubling us had more purple; the stem and the basal sheaths purple-tinged, the sepals purple or brown, these and the petals broader and blunter than in *C. trifida;* the lip larger and with long rows of purple dots below the marginal notches; and the column was more erect. Bachelot de la Pylaie, in describing his botanizing trip in 1816 into the interior of northern Newfoundland, back of Havre du Croc (Croc Harbor), referred to "Le *Corallorhiza occidentalis* N[obis]. voisin de *l'Halleri.*"[1] *C. Halleri* is a later name for *C. trifida,* so that La Pylaie was doubtless finding the same plant which, more than a century later, was puzzling us. La Pylaie's name was accompanied by no description and consequently has no nomenclatorial status. The rare plant of the tundra of northern Newfoundland is, however, a very close match for the beautiful plate accompanying the original description of the Scandinavian *C. ericetorum* Drejer in Flora Danica, xiv. fasc xl. 7, t. *MMCCCLXIV* (1843). In Europe, *C. ericetorum* is treated as a variety of *C. trifida,* as *C. innata* R. Br., var. *ericetorum* (Drej.) Reichenb. f. Ic. Fl. Germ. xiii. 160, t. 139, figs. I and II (1851), *C. innata* R. Br. being a long-used but later name for *C. trifida.* From our field-experience with the two we are not yet clear whether it should be merged with *C. trifida* or maintained as a species. The three collections, of four specimens, brought in seemed wholly distinct; and we can only hope that some other season the plant may flower in such quantity as to give us a good series.

But these preliminary days of hardening in the neighborhood of Flower Cove were not devoted primarily to the orchids. The willows were in perfection of flowering and we were able to get for the first time good staminate material of *Salix calcicola;* and a number of other willows were new to us or at least to the known flora of Newfoundland. Sunday, after the conventional heavy dinner, Griscom and I started for a brisk non-botanical walk to Sandy Cove and back. We adhered very faithfully to the non-botanical programme, but at Sandy Cove I could not resist the temptation to look on the rocky

[1] La Pylaie, *Voyage a l'Ile de Terre-Neuve,* 86 (1825).

crest for the *Braya* which, a year before, Long had discovered there in fruit. It was now in full bloom, with large white petals tinged outside with blue-violet; and later in the season we found it in profusion on the gravel- and rock-barren of Savage Point and in less abundance on Yankee Point. When Long first found a few over-ripe specimens in 1924 and thus made us all late to Mrs. Richards' supper, I called it *B. purpurascens* (R. Br.) Bunge, a wide-ranging arctic species; but now, with a splendid series in all stages from bud to ripe fruit, it stands apart as a perfectly distinct species with which it is only right to associate the name of its discoverer; for, if there is a keener collector or discoverer of rare and local plants than Bayard Long, I have yet to meet him.

We were having such superlative success that already the exploration of the Long Range to the south was being pushed forward to an indefinite future; and Griscom, remembering that from earliest boyhood he had had a yearning to stand on Cape Norman, called attention to the fact that Howley's geological map showed that the rock of the eastern end of the Straits, from Pistolet Bay, just beyond Cape Norman, eastward was "serpentine, etc." The serpentine barrens of Mt. Albert in Gaspé and of Blomidon on the Bay of Islands, as well as the serpentines about Bonne Bay, are all famous for their rare and localized or endemic species and, consequently, the infection rapidly spread and we all yearned to stand as promptly as possible on Cape Norman and to explore the serpentine barrens which we pictured as occurring just beyond. So arrangements were made with "Lo" Whalen to start by motor-boat as soon as possible after Sunday for Cook Harbor (or Brandy Harbor), just beyond Cape Norman, on Pistolet Bay. Monday and Tuesday, however, there was a northeast storm and, assured that no small boat could live on the Straits, we continued local collecting and on Tuesday three parties went out.

Long and I tried our luck on the barrens a mile back of Savage Cove, Griscom and Pease walked strenuously eastward to Payne's (pronounced Pine's) Cove, and Wiegand, Gilbert and Hotchkiss proceeded by motor-boat with Lo Whalen along the sheltered west coast as far as Ice Point. Long and I had plenty to occupy us. *Taraxacum* was in full flower and it was more than obvious that we did not at all understand the indigenous species and must collect good series of specimens; and *Salix* was in a similar plight. In making our way around one large pond in the limestone-barren we found our-

selves struggling through a thicket of a coarse willow suggesting the common *Salix discolor* Muhl. of more southern latitudes. But this shrub of Savage Cove had its long black-scaled caterpillar-like aments on elongate leafy-bracted peduncles and expanding with the leaves,—surely not *S. discolor* which is a "pussy willow," with aments sessile and expanding long before the leaves. The affinity of the large shrub with long-peduncled aments is not quite clear. In some characters it belongs with *S. discolor*, in others it is nearer the European *S. phylicifolia* L. and its American representative, *S. planifolia* Pursh; but it is clearly a new species, an addition to the already extensive list of Newfoundland endemics. At another point, where an ice-cold rill entered a pond, there was an extensive "salicetum," with the beautiful *S. myrtillifolia* Anderss. with lustrous dark-green closely crenulate leaves, the Rocky Mountain *S. Bebbiana* var. *perrostrata* (Rydb.) Schneider (new to Newfoundland) and a third species, a handsome large shrub with foliage as white as in *S. candida* but with quite distinct habit and with very long styles, *S. cryptodonta* Fernald, which had been known only from the type-region on the Humber, 150 miles to the south.

When we at last got through the belt of scrub-spruce and bog-ponds and came to the deeply shattered rock-pavement (plate 153, fig. 2) of the limestone barren, which is apparently an eastward extension of the Rock Marsh, we had thrill after thrill. The Yellow Lady's Slipper colored the peaty borders of the barren with hundreds or perhaps thousands of fully expanded flowers. We had previously had it from limestone barrens farther south and even from the highest point of Newfoundland, the summit of Lewis Hills; when we got back to the house Wiegand's party had also brought in a collection of it; and during the following week we saw it in profusion with arctic-alpine plants on many of the barrens eastward to Pistolet Bay. We were impressed by its few leaves and especially by its consistently short, broad and flat purplish petals; the Newfoundland plant, in the thousands of individuals we saw, rarely showing any tendency to the elongate curling petals of continental *Cypripedium parviflorum* Salisb. In fact, the larger specimens are, in their broad flat petals, so like some plates of the European *C. Calceolus* L. that, without examination of the staminodium, one would as quickly place them with the European as with the American species. In the form of its staminodium the plant of the Newfoundland limestones is somewhat dif-

ferent from either but, as I suggest in the more detailed discussion of the plant in Part III, it may well be that *C. Calcicolus*, *C. parviflorum* and the plant of unglaciated areas of western Newfoundland are geographic phases of one circumpolar type.

The damp gravelly pockets were full of *Antennaria cana*, which we had all seen for the first time this season on Savage Point the day before but here much more abundant and from now on to be found everywhere eastward along the Straits; and equally abundant was a small pink-flowered *Braya* with pilose pods, obviously quite different from the larger white-flowered plant with glabrous pods which we had been getting. This made a third species of this arctic-alpine genus for western Newfoundland and when we got back we found that Wiegand's party had been collecting the same thing on Ice Point and during the succeeding weeks we found it general in limestone gravel all the way to Pistolet Bay. It proves to be the plant collected by Drummond on the Rocky Mountains of Alberta and described by Hooker as *B. alpina* β. *americana*. It is certainly rare in Alberta, the only material I have seen being some collected by the late Stewardson Brown, perhaps at Drummond's own station. But the extensive series from northwestern Newfoundland clearly demonstrates that it is a species quite distinct from *B. alpina* Sternb. & Hoppe of the European alps and likewise distinct from *B. siliquosa* Bunge, the Siberian species to which Schulz[1] refers *B. alpina* β. *americana*.

A turfy and bushy island on the rock-barren was the home of a beautiful *Arnica*, thousands of sterile plants; but this was evidently an off year, for we could get barely a dozen individuals which showed any sign of flowering. *Arnica* in Newfoundland had heretofore been known only from the region of Port-à-Port Bay and Cape St. George: *A. chionopappa* Fernald, *A. pulchella* Fernald and *A. terrae-novae* Fernald. This was a very large but not specially exuberant colony of *A. terrae-novae* and its discovery merely started the season, for from now on almost every different area explored, from Ha-Ha Mountain on the east to St. John's Island at the southwest, yielded its own peculiar *Arnica* as well as its *Antennaria*, *Taraxacum* and *Euphrasia*. In the wetter mossy pockets we spied some stiff bronze or purplish racemes, fruiting plants of the arctic *Pedicularis flammea* L., already known from the Shickshocks but new to Newfoundland. Wiegand's party had gleaned the best plants from Deadman's Cove, Anchor

[1] O. E. Schulz in Engler, Pflanzenr. iv[105], 231 (1924).

Point and Ice Point, extensions southward of many of our good finds, including the most southern colony yet known of the pink-flowered *Braya*, and northern extensions of *Antennaria straminea* and of *A. albicans* Fernald, the latter previously known only from Table Mt., Port-à-Port Bay; and Griscom and Pease, who had gone merely to stretch their legs, brought in a bunch of the beautiful rosy-pink *Orchis rotundifolia* Pursh, which colored the wet barren near Shoal Cove, another species new to Newfoundland, since the old record in Hooker's *Flora Boreali-Americana*, Dr. S. F. Blake informs me, was based on material of *Habenaria obtusata*. They also had splendid clumps of the European *Poa alpina* var. *frigida* which Long, Dunbar and I had added to the North American flora in 1924.

Wednesday, the 15th, started in as a "civil" day, so, as soon as we could get the presses filled with ventilators and stacked as near as we dared to the kitchen-range, we loaded Lo's boat with presses, paper, food, sleeping bags, etc. and headed down the Straits for Cook Harbor. In the eighteen miles from Flower Cove to Eddies Cove there are shelters or good harbors every mile or two and, of course, fishing colonies of considerable size. Then, beyond Eddies Cove, for sixteen miles to Big Brook, comes the Long Straight Coast, with no shelters for boats, a cliff-wall comparatively low at the west, but at "the Highlands" reaching an altitude of about 100 feet. A small boat caught there by a storm is completely at the mercy of the waves and cliffs; consequently the Straits fishermen have learned never to try the trip between Eddies Cove and Big Brook, Boat Harbor or Cook Harbor except on quiet water. During the late forenoon as we chugged along this coast, with endless fascinating limestone barrens, wild cliffs (the haunts of innumerable shore birds) and occasional waterfalls, we longed to get ashore to explore; but it was necessary to make all speed northeastward while the water was good. Soon after noon, however, the sea had become a little rough; our boat was too small for its load and the captain announced that nothing could make him go beyond Big Brook (where he had cousins). So Big Brook it had to be. But if we had not put in there we should perhaps never have known Tom Diamond and his good wife. Tom Diamond is one of the best known characters on the Straits, the friend of everyone from "the Harbor" (Flower Cove) to Brandy Harbor, a red-headed giant brim-full of Gaelic or Celtic good-humor, and picturesque in his fishing clothes; his back hair clipped short, his front hair unbarbered,

and a long forelock projecting from under his cap and flapping about his face to brush away the flies. He and his brother are the only settlers on this cove; they want no one else, for there would be too much crowding of cod-traps.

The wind was increasing and there were three or four hours to supper-time, so we all started botanizing; Wiegand, Gilbert and Hotchkiss eastward along the shore, Pease and Griscom to "the Highlands" three or four miles to the east, and Long and I straight back to the south. The cliffs forming the escarpment back from the shore were a fascinating alpine garden but covered mostly with luxuriant colonies of species we already had. Here, however, was the big-flowered woolly *Cerastium alpinum* var. *lanatum* which was new to us, and here were new troubles in *Poa*, *Salix* and *Cochlearia*. But leaving the escarpment, which properly belonged to Wiegand's assignment, Long and I went back over the crest. Here were many of the good things of Flower Cove and Savage Cove—the pink-flowered *Braya*, *Pedicularis flammea*, *Potentilla alpestris*, etc., and, for the first time north of Port-à-Port Bay, the unique *Antennaria eucosma* Fern. & Wieg., with blackish heads and erect spear-like white leaves. But, naturally, we were looking for novelties and we were not at all disappointed. The peaty border of a pool had a low cotton grass which looked unfamiliar, much lower and stiffer than *Eriophorum opacum*, which abounds along the Straits, and, since I had once made a revision of the American species of *Eriophorum*, but did not know this one, we were greatly excited. Subsequently we collected it eastward to Pistolet Bay and westward to Savage Cove and, as I have already shown,[1] it proves to be the true *E. callitrix* Cham., the rarest of Old World cotton grasses, heretofore known only from the type-region, St. Lawrence Bay on the west side of Bering Straits. With *Eriophorum callitrix* were the very rare *Carex capitata* L., new to Newfoundland, and a pretty *Primula* with non-farinose leaves, deep-crimson flowers and purple-tinged scapes, a plant we afterward found in better development at the margin of Big Brook, thence eastward to Pistolet Bay. This proves to be *P. sibirica* Jacq., var. *arctica* Pax, heretofore reported only from Kamtchatka and arctic Europe, but represented in the Gray Herbarium from the Canadian Rockies as well. The Alpine Bearberry on the knolls attracted us by its unusually thin and only slightly rugose leaves and a little investigation

[1] Fernald, RHODORA, xxvii. 205 (1925).

showed that we were getting *Arctostaphylos rubra* (Rehder & Wilson) Fernald, the species with bright-red berries, known from limestones of Siberia, China, the Canadian Rocky Mountains, Anticosti and the Mingan Islands but not previously from Newfoundland, although its occurrence there was wholly to be expected[1]; but, now that we had "spotted it," it was found everywhere, eastward to Burnt Cape, where the berries were ripe, and westward to Yankee Point. Its berries are smaller, thinner-skinned and much earlier to ripen than the purple-black berries of *A. alpina*.

Returning for supper, we found that the official time at Big Brook was slower than at Eddies Cove, and so much slower than that at Flower Cove, by which our watches had been set, that we still had an hour for another turn, so we headed for the mouth of Big Brook. There we were joined by Wiegand and his group and we all set to work collecting a fine series of *Primula sibirica* var. *arctica* and then turned our attention to *Epilobium Drummondii* Hausskn., a characteristic Rocky Mountain species, known in eastern America only from the Torngat Mountains of northern Labrador and from the Shickshocks in Gaspé. In the thicket of *Salix cordifolia* and *S. calcicola* there was a strange *Hieracium*, still very immature and mentally noted to be remembered on the next call at Big Brook, but the most shaggily villous species we had ever met. When we got back to the house Griscom and Pease had come in from "the Highlands" with many of the same species we had all been getting, including a fine lot of *Carex capitata* and a very densely matted *Asplenium* with almost leathery fronds. It proves to be nothing but *A. viride* Huds., but along the Straits it forms turf so dense and firm that it takes vigorous cutting to get out chunks of the sod; and the fronds, growing in almost full exposure to the sea-fogs and winds, are so tough that the carpet can be walked upon without being seriously injured.

It took all the evening to put up our material and, after a good night on our air-mattresses, we awoke to find the sea still dark and choppy, offering no immediate hope of our rounding Boat Harbor Point. So we sought new areas to explore. Griscom and Pease, as usual, were given the "long-legged" assignment, this time to go as far into the interior as possible; Long and Gilbert crossed Big Brook and worked around the shore westward to Mile Brook; and Wiegand, Hotchkiss and I headed eastward toward Lower Cove. All three

[1] See Fernald, Mem. Am. Acad. xv. 314 (1925).

parties brought in better material of *Antennaria eucosma* and collections of *Tanacetum huronense* var. *terrae-novae*, which was now making conspicuous carpets of white plumes with occasional large gold buttons in the turfy slopes all along the Straits. Our party became much absorbed in *Taraxacum*, *Cochlearia* and *Draba;* and in the turf some rods back from the beach we found great carpets, now in full bloom, of the "Sea Purslane," *Arenaria peploides* var. *diffusa*, much smaller and with less rigid branches than in var. *robusta* Fern. of the New England strands. Another plant which greatly pleased us was *Carex Deweyana* Schwein. This species is common in Canada and the northern States, but its status in Newfoundland was doubtful. There was an unverified record from Bay St. George, and Griscom and I had got a cow-bitten young sprig of it near Savage Cove; but here at Big Brook it was abundant, along with arctic types. We tried to make it something better, but it proves to be very characteristic *C. Deweyana.* On the high limestone cliffs near "the Highlands" there was a strange prostrate willow, resembling the arctic *S. anglorum* Cham. but differing from it and from its known southern varieties (of the serpentine mountains of Bonne Bay and Bay of Islands and the serpentine Mt. Albert in Gaspé) in its much smaller leaves, its very short aments and its tiny capsules, only 3 or 4 mm. long, another Newfoundland endemic, later found on Cape Norman and to the west toward Eddies Cove.

The other two parties brought in full boxes. Both of them had plenty of *Orchis rotundifolia* and of *Lesquerella arctica* (Wormskj.) Wats., the latter a silvery rosette-plant with golden flowers and plump fruits, already known from the southwest coast and, now that it had begun to show, soon found to be generally distributed in limestone gravels from Burnt Cape in Pistolet Bay south to St. John Bay, thence, as our earlier collections show, to Bay St. George. Griscom and Pease also displayed a collection of a tiny *Epilobium*, hardly in flower but, with its basal rosette, remote linear leaves and few flowers, clearly *E. davuricum* Fisch., new to Newfoundland and one of the rarest of species, heretofore represented in the Gray Herbarium by only a few poor bits; but now, after the season is closed, illustrated by full sheets, collected all along the northwest side of Newfoundland, from Cap Dégrat to St. John's Island. After supper the water was quiet and Tom Diamond said that we could easily make Cook Harbor in three hours, but he had reckoned without our skipper. Lo had

renewed his fund of conversation at Big Brook and when we rounded the point and came abreast of Boat Harbor (where he had more cousins) we suddenly headed in. Upon our protesting that we were going to Cook Harbor we were given the alternative of going in to Boat Harbor for the night or being landed on the nearest shore, to hunt for another boat. This was unpleasant but we were helpless under existing circumstances; so Boat Harbor it was. The two households of Woodwards, who form a clan-like colony at Boat Harbor, took us in for the night and it was toward 11 o'clock before we had visited enough to be allowed to retire. About 2 A.M., after a three-hour struggle with "scarlet runners" (*Cimex*), we heard Lo's voice from down stairs, "Mr. Fernald, it's a clever morning." When we came down, everyone was about and at the day's occupations; the men had gone out to the cod-traps, the women were getting breakfast; and by 6 o'clock we had rounded Cape Norman, a great bare limestone wall with fantastically weathered strata, and were actually heading into Cook Harbor. A chance to spread our mattresses on the floor was secured at Skipper John Decker's and, after discharging our cargo, we put across the bay to the nearest point which Howley's map indicated as "serpentine, etc."

In the brilliant morning light Burnt Cape, separating Pistolet Bay from Ha-Ha Bay, was purplish or reddish-brown, and, encouraged by the geological map, we expected soon to be on a second, though small, Mt. Albert or Blomidon. Gradually, however, as we neared Burnt Cape, the reddish-brown color so characteristic of the weathered serpentine barrens of Gaspé and Newfoundland faded and when we came close under the Cape it had assumed a very familiar slate-gray tone, the color of most Silurian limestones of Newfoundland. That it was not serpentine was altogether too obvious and we could see no distinction between this and the limestone we had left the night before at Big Brook. Landing at a sheltered point on the east side of the Cape, toward Raleigh (pronounced Rally), we told Lo to come back for us at 2 P.M. It was now 9 o'clock and, since we had so obviously been fooled as to the character of the rock, we could certainly get all that was worth while from it and eat our lunches in five hours.

Griscom, Pease and Hotchkiss were to work northward around the tip of the Cape, and the rest of the party started due west to make a sort of cross-section. In two minutes the shouting began. "*Carex concinna.*" "Yes, we're getting it too, and the queer *Asplenium.*"

"Here's *Polystichum Lonchitis.*" "What's the other *Carex?*" "What's the *Habenaria?*" And so on until the parties were out of hearing. *Carex concinna* R. Br. had only once been found in Newfoundland and then very little of it, on Cape St. George. *Polystichum Lonchitis* is frequent on the West Coast but we had not met it before this season. The "other" *Carex* proves to be true *C. livida* (Wahlenb.) Willd., a rare and poorly understood plant of northern Europe and Alberta, here found for the first time in eastern America.[1] The *Habenaria* was a very distinct plant with slender greenish-yellow spiciform racemes, emitting a delicious fragrance of vanilla, the lip three-toothed, clearly the plant which I had very recently received from Greenland as *Habenaria albida* (L.) R. Br., now found for the first time in North America. The plant abounded in damp glades and on open peaty slopes where Long, Gilbert and I had become anchored and where we spent much of the forenoon, but it must be somewhat localized, for, when Griscom (who had an eye open particularly for orchids), Pease and Hotchkiss joined us in the afternoon, they had seen nothing of the sort. Subsequently they got plenty of it, on Cook Point or on Cape Norman and later in the month we stretched its range to the western end of the Straits. *Habenaria albida* of continental Europe is appropriately named for its tiny whitish flowers. The flowers of our plant no one would intentionally call white; they are stramineous and much larger than in *H. albida,* and in details they show many departures from it, and it seems very clear that the plant of the Faroe Islands, Iceland and Greenland, which has passed as *H. albida,* is a separate species, now found in profusion in northwestern Newfoundland.

Wiegand had got beyond reach, so that we now had at least three different parties out and, when Griscom and Pease appeared at 1 o'clock, Hotchkiss was separated from them. In this way the northern half of Burnt Cape got a preliminary searching. Long and I, having learned from many experiences the importance of raking the ground for the less obvious species, initiated Gilbert into this art, bending over or crouching and creeping gnome-like over the grayish or whitish angular gravel. At first we should have said that there were absolutely no plants there, but our eyes were soon accustomed to the neutral color, and tufts of *Festuca supina* Schur, the tiny *Poa alpina* var. *brevifolia* Gaudin of the Swiss Alps, new to North America

[1] See Fernald, RHODORA, XXVIII. 5 (1926).

and very distinct with its distichous blunt leaves only a centimeter or so long, *Carex glacialis*, *Antennaria cana*, *Lesquerella arctica* and other canescent or cinerous species began to appear. Thus we spent the late forenoon and very soon we were getting a singular little gray *Potentilla*, with deeply lacerate leaflets and tiny cream-colored petals. In the field I took it to be the arctic *P. pulchella* R. Br., but it proves to be very different in many details; and after a study of the three monographs, of Lehmann, Wolf and Rydberg, and the critical notes on arctic species by Simmons and others, and an examination with Dr. Rydberg of the species of this affinity, it becomes apparent that Burnt Cape has an endemic species of *Potentilla.* Further up the slope Wiegand was collecting *Antennaria*—the third and fourth species from Burnt Cape, and there we came upon a veritable garden of *Orchis rotundifolia*, the pink flowers making a vague lilac color as seen from a long distance away. In a bushy glade we found a colony of *Epilobium alpinum* L. (*E. anagallidifolium* Lam.), common enough on the Tabletop Mts., Gaspé, but new to Newfoundland.

When the scattered members of the party assembled at the crest there was some delay over *Arnica terrae-novae* and *A. chionopappa;* and I was picking from the crevices a *Taraxacum* which, in its small blackish involucres, was unlike anything we had seen before. Griscom and Pease, as already stated, had lost Hotchkiss, but he was now in sight. They had, of course, many of our good things, and two more Antennarias; but they were specially excited over a strange *Oxytropis* with deep violet corollas and reflexed fruits, and no wonder! It was *O. foliolosa* Hook., described from the mountains of Alberta but now known very locally southward to the high mountains of Colorado, here found for the first time in the East. We had landed on Burnt Cape with grave doubt, disappointed that it was not serpentine, but now that it approached 2 o'clock and we had planned to look at Ha-Ha Point, it was necessary to abandon the most thrilling spot thus far found. So, reluctantly, we descended the slope to the waiting motor-boat. When we got back to the belt of gravel where the new *Potentilla* grew, Long began to direct his eyes and nose into the gravel and he soon held up *Crepis nana!* *Crepis nana* Richardson is one of the characteristic plants of the cordilleran region of North America, otherwise known only on the Arctic coast of America, on the Altai of Siberia and on the Torngats of northern Labrador; but here it was on Burnt Cape, and, true to form, Long was holding up the

procession by finding a "thriller" after it was time to quit. No one objected, however, and we all fell on our hands and knees and crawled over the gravel until we had sufficient material so that our herbaria could each have a bit; but there are no duplicates for distribution, for *Crepis nana* is either the rarest plant of Burnt Cape or we did not find its real home. Farther down the slope, near the upper border of the beach, we could not pass without collecting *Astragalus alpinus* L. and *A. eucosmus* Robinson. We already knew them from Newfoundland but these were the first specimens (though by no means the last) for 1925.

Crossing Ha-Ha Bay, we landed at the base of Ha-Ha Mountain (plate 153, fig. 1), a ragged trap bluff only a few hundred feet high but fantastic in its irregularity, the unplaned rock-spurs projecting at various angles and indicating a lack of glacial scouring. We could spare only an hour, so every minute counted. Griscom and Pease tackled a steep chimney and promptly came upon the tiny gray *Draba nivalis* Lilj. of the Arctic and the Shickshock Mts., but new to Newfoundland, and *Ranunculus pedatifidus* var. *leiocarpus* (Trautv.) Fern. (*R. affinis* R. Br.), another Arctic species, heretofore unknown south of the Torngat region. It occurs on precipitous walls where Long (plate 153, fig. 3) insisted on climbing for some on a later trip. Griscom and Pease also added to the fast growing series of *Taraxacum* and I was particularly delighted to have them bring back the big *Oxytropis campestris* var. *johannensis* Fern., the plant so characteristic of gravels along the St. John River in Maine and New Brunswick. At the foot of the steep slope we were getting another plant which greatly pleased me, *Streptopus oreopolus* Fern. which is so characteristic of subalpine meadows in the Shickshock Mts. of Gaspé and which we had supposed to be endemic to that area. And the springy meadow at the foot of the slope was a sight never to be forgotten, a blaze of orange, white, violet and pink in great masses, with three species of *Taraxacum*, *Cerastium alpinum* var. *lanatum*, *Arabis alpina*, *Astragalus eucosmus*, *Iris setosa* var. *canadensis*, *Hedysarum alpinum*, *Epilobium latifolium* and dozens of others, with the flexuous blackish tops of *Carex atratiformis* nodding everywhere and strange willows forming large clumps still in flower, at least two of them new to science.

It was hard to leave, but we must get back to Cook Harbor for supper. Our boxes were jammed tight-full; we had scarcely slept the

night before and had breakfasted at daybreak and it would be midnight before we could get the specimens into paper. So, although we knew that there was plenty more to do on Ha-Ha Mountain and Ha-Ha Point, just as there was on Burnt Cape, we had to be satisfied. And on the whole we ought to be. When we finally dropped to sleep our day had been twenty-two hours long and we knew that we had practically all the Antennarias of Western Newfoundland, *A. cucosma*, *A. cana*, *A. straminea*, *A. albicans* and *A. spathulata* Fernald; and *A. spathulata* var. *continentis* Fern. & St. John, a plant previously known only from the Labrador; and we had collected at least twenty-five species new to Newfoundland, including a number new to science, others new to America, others the first time east of the Rockies and others the first time except in Gaspé, Anticosti or northern New Brunswick and northern Maine. In the current idiom, that was *some* day!

Saturday our presses kept us busy until noon. We did not have driers enough and it required special pains to keep the specimens from sweating and darkening. When we sat down to dinner Hotchkiss was missing. But he soon came in from a short stroll back of the village, with a bouquet of the vanilla-scented *Habenaria* and a bronzy-purple plant with velvety purple-black flowers, quite new to us but obviously the arctic *Bartsia alpina* L. Mrs. Decker and her daughter could not appreciate our enthusiasm, for "Velvet Bells" (*Bartsia*) was a common plant in their experience and the yellowish-green "Smell Bottle" (*Habenaria*) was likewise an old story; but we hurried through dinner and got out as soon as possible. Long and Pease were to be landed on Schooner (or Brandy) Island; Wiegand, Griscom and Hotchkiss were to be taken to Cape Norman, and Gilbert and I were to spend the afternoon on Cook Point, back of Cook Harbor.

Many of the good things of Burnt Cape were also on Cook Point, but we were not sufficiently hardened as to pass untouched *Habenaria viridis*, *Eriophorum callitrix*, *Carex bicolor*, *Primula sibirica* var. *arctica*, and other species which, a few days before had been so exciting. Another *Taraxacum*, *Arnica terrae-novae* again and, of course, *Bartsia alpina* absorbed much of our attention. Besides *Antennaria albicans* we got *A. vexillifera* Fernald, a species supposed to be endemic to the Shickshock Mts.; and, on the turfy upper margin of the strand of Norman Cove, Gilbert and I found a single individual of *Oxytropis foliolosa*. We began a long search for another but quite in vain; or,

at least, during the search we suddenly found ourselves in a dense carpet, like a lawn, of a repent *Astragalus*, the slender freely forking branches extensively creeping and bearing exquisite lilac flowers, some clustered at the tips of long capillary peduncles, some almost sessile in the axils. The plant was fascinating and quite strange and when we got back, late to supper, the rest of the party were inclined to jeer because we had so much of it. But the 34 full sheets (and 35 more with fruit, collected on a later trip) will all be in demand, for it is a beautiful new species of the west-American subgenus *Homalobus* and its nearest relative is the very local *Astragalus yukonis* Jones.

Both the other parties had been collecting the *Bartsia*, *Habenaria* "*albida*," and the usual series of choice but not novel species. Cape Norman had yielded very large material of the pink-flowered *Braya*, *Arnica pulchella* (the first time except on Table Mt., Port-à-Port) and some perplexing willows. And Long and Pease had found *Oxytropis foliolosa* on Schooner Island. They had a splendid collection of the most beautiful *Antennaria* yet collected of the *alpina*-series, a plant with unusually broad leaves and extraordinary large blackish heads; and just as they were hurrying to jump aboard the motor-boat for the return trip Long, again true to form, spied a strange *Cerastium* in a crevice and had barely time to snatch a single piece before the boat swashed away from the shore, *Cerastium Regelii* Ostenfield, a rare species of arctic Eurasia with flowers much smaller than in *C. alpinum*, the short calyx-lobes rounded. We have only one small piece but, as Long says, "we at least know where to go for it in America." While waiting for Gilbert and me to come to supper the others had wandered along the shore at Cook Harbor and had gathered a quantity of *Hymenolobus procumbens* (L.) Nutt., new to us but already known from the Straits, the only region of eastern America where it grows.

Sunday morning the water was quiet and it seemed the part of wisdom to get our skipper and his boat headed around Cape Norman and turned toward home, so by 6 o'clock we were off. Griscom, skeptical, after our having used three days to make the "easy half-a-day's run" from Flower Cove to Cook Harbor, and wanting to get back promptly, walked; and he showed his wisdom for, as soon as Boat Harbor came in sight, the motor-boat was headed in and we knew that protest was useless. We must spend the day at Boat Harbor while the breeze had a chance to come up and ripple the water

and Lo freed himself of the new supply of gossip from Raleigh and Brandy Harbor. Promptly, when we touched at Woodward's wharf, Pease, Gilbert and Hotchkiss decided that they, too, would rather walk and so be certain of reaching Flower Cove in time for the next mail south, on Monday. That left Wiegand, Long and me; and, knowing from experience that there would be no hope of leaving before next morning, we tried to be philosophical and went botanizing. The list of plants would largely repeat that of the preceding days; but Boat Harbor yielded a few species which we had not seen. In a shallow pool to the west, toward Watts Bight, there was an aquatic grass just coming into bloom, clearly an *Alopecurus* but strange to us, the arctic plant which I have recently discussed, *A. aequalis* var. *natans* (Wahlenb.) Fern.[1], known outside the Arctic only at the Straits of Belle Isle.

After the heavy Sunday dinner we were glad of a good walk; so we went to the high ridge south of the harbor. In the scrub thicket *Vaccinium ovalifolium* Sm. was abundant, a species of Pacific America already known from western Newfoundland; and at one point we came upon a colony of *Sanicula marilandica* L., singularly out of place in this arctic-alpine flora. The gravel at the crest was thoroughly mixed and packed as if it had formed the bed of an ancient stream; and in this mixed gravel, with *Lesquerella arctica,* was a great colony of *Antennaria vexillifera,* which we had got on Cook Point the day before; and lower down, while collecting the now common pink-flowered *Braya,* Long found a single rosette or another species, the leaves covered with long, crisp white villosity. Seach for a full hour brought one more sterile plant to light. We need it in better condition but from the foliage alone it seems probable that it is *B. Richardsonii* (Rydb.) Fern. of the Canadian Rocky Mountains.

When we started early Monday morning there seemed no question that we should get to Flower Cove in a few hours. The water was calm and if we could but get past Big Brook there would be no place to visit before Eddies Cove and from there on we should be near home. Luckily, Tom Diamond was out at his traps so we stopped outside to exchange gossip and thus safely passed Big Brook. On the way down we had been impressed by some waterfalls coming off the barrens near 4-Mile Cove, and as the sea was now so very quiet we decided on the return to stop and look them over. They yielded nothing

[1] Fernald, Rhodora, xxvii. 198 (1925).

novel, however, but we collected the specialties of the place and in one depression in the gravel I found a *Carex* which did not look quite familiar. In the hurry of the moment, with the boat tossing in the surf waiting for us, I did not stop to examine it, but dug a few plants and went on; and, as is so often the case, I soon wished that I had had my wits about me and had taken a good supply. For the little plant, with mostly pistillate terminal spikes, superficially resembles the rare arctic *C. rufina* Drejer, but in its technical characters it belongs with *C. livida*. It has been described as *C. livida* var. *rufinaeformis* Fern.[1] but better (especially riper) material may show it to be a unique species.

This time the fates, themselves, took Lo's part. We had not got far beyond 4-Mile Cove when a squall struck us and for the next hour the little boat fought bravely through the rough sea. The splash was bad for our presses but, by stretching ourselves and our waterproof coats between them and the bow of the boat, we succeeded in fending off most of the water until we got into the shelter of Eddies Cove. So there we were, on shore again, destined to stay at Eddies Cove until the blow was over. After dinner the obvious thing to do was to go botanizing. Almost in Mrs. Coates's yard *Carex incurva* was making a carpet at the easternmost spot at which we got it. The boggy swales were full of *Carex chordorhiza* var. *sphagnophila* and *C. microglochin*, *Primula egaliksensis* and the other plants characteristic of swales at Flower Cove; but many openings in the spruce thicket were occupied by the Rocky Mountain *Epilobium Drummondii*, which we had first seen at Big Brook, now well developed and with the characteristic bulbs forming at the bases of the stems. We hoped to find many interesting things along Eddies Cove Brook, which at its mouth diffuses itself as a shallow stream or thin film over a broad expanse of rocky delta; but on the whole the flora there was Canadian rather than arctic, the most ordinary plants of thicket and swale; but in one pocket we did find *Viola palustris* L., a species new to Newfoundland but naturally to be expected, since it abounds in Gaspé and reaches the mountains of Maine and New Hampshire. It was scattered among the tall grasses and sedges and mostly past flowering, but we secured enough in anthesis to give us the delicious fragrance of *Viola odorata* L., a quality I had never before noticed in *V. palustris*.

[1] Fernald, RHODORA, XXVIII. 7, 8 (1926).

When we came in to supper the wind was going down and after supper we packed up our things ready to make the two-hour trip home; but, no! Our employee ordered us to wait until morning. We were in his hands and obviously could not discharge him until we got back to Flower Cove; and on Tuesday morning when our motor-boat came up to the Whalen's wharf, the race was over and the pedestrians had won by 20 hours! They had the old presses cleared and the driers dried; and, after we had read our mail, everyone set to work putting our tremendous new collection through the presses. It was three days before some of the plants could get into ventilators; but by the second day, July 23, we felt it safe to take some local walks, for immediately in the neighborhood there would not be enough of novelty to embarrass us. Griscom, bent upon studying the birds of the comparatively sheltered thickets at Eddies Cove, had gone there; but the rest of us were still wholly botanists. In groups of two or three we retraversed the region from Sandy Cove to Bear Cove and after two such days it became clear that we had the area now pretty well in hand. We extended various ranges but added only a few species to the Newfoundland list. Two, however, are worth special record. In the thicket near Savage Cove there was a tall *Epilobium* with flowers much larger than in *E. Hornemanni* Reichenb. which abounded everywhere. The strange plant has the more pointed leaves with sharper teeth than in the latter species; and comparison shows it to be a perfect match for Alaskan material of *E. Behringianum* Hausskn., a species heretofore known only from southern Alaska, and, by way of the Aleutian Islands and Kamtchatka, southwestward to the Kurile Islands. The second plant was also an *Epilobium*. The pond at the border of the Rock Marsh, where *Agrostis melaleuca* and *Eriophorum Scheuchzeri* abound, has its southern shore bordered by an extensive limestone pavement which, during the spring thaw, is obviously a part of the pond-floor. There we got many interesting things and, failing to recognize one species, I mechanically took two or three individuals for examination. It is fortunate that I did so for it proves to be *Epilobium leptocarpum* Hausskn., var. (?) *Macounii* Trel., another cordilleran plant new to eastern America; and, as in the case of Long's *Cerastium Regelii*, we at least know where to go for more. Better than that, we know a second station, for in a few days we were collecting a full series along the trail up Bard Harbor Hill.

Our curiosity regarding the region of Cape Norman being tempor-

arily a little satisfied we now turned our minds to the Highlands of St. John and planned to take the "Home" south on the morning of Monday, the 27th, to St. John's Island, thence to cross by motor-boat to Bard Harbor on the mainland shore. This was the trip we had long dreamed of and it was consequently a shock and deep disappointment to the rest of us when Griscom and Pease announced that they must start home by that boat. We could hardly accuse them of dreading an ascent on a trail to 1900 feet, for Pease's mountaineering exploits are too well known, and I had personally seen Griscom add a sick packer's load to his own and carry them both at once up the steep slope into Fernald Basin in the Shickshocks. So we were forced to accept the inevitable and leave them on the "Home" when we reached St. John's Island. Mr. John Haliburton, with whom we had arranged to get put across to the mainland, was away but Miss Haliburton insisted on our staying to dinner and then some of the men took us across nine miles to Bard Harbor.

Bard Harbor has two families, those of Eli Galton and his son-in-law, Caleb Chambers, in summer and a third family in winter; and three or four miles to the south, at the mouth of Doctor Brook, there is the Galliott family. The men were all away on the outer islands, but Mrs. Galton and Mrs. Chambers took good care of us. It was obviously too late, at 4 in the afternoon, to explore the hills, but the great limestone escarpments of both hills, Bard Harbor Hill to the north, Doctor Hill to the south, were pretty tempting, so we ventured to go a little way on the trail up Bard Harbor Hill. After crossing marshes the trail led through rich Canadian forest and clouds of mosquitoes and flies; and, perhaps largely to get away from the flies, we hurried up the slope. Slightly below timber-line we came to a steep glade, full of *Heracleum lanatum* Michx., *Polystichum Braunii* (Spenner) Fée and *Thelypteris Filix-mas* (L.) Nieuwl. and with so many thousands of the famous European snail, *Helix hortensis*, that, struggling up the wet slope and perpetually slipping back, we promptly dubbed the place "Helix Slide." Reaching the rocky summit we looked in vain for limestone. We were on a vast tableland of hopelessly sterile quartzite and tried to be enthusiastic over *Juncus trifidus* L., *Luzula spicata* (L.) DC., *Hierochloe alpina* (Sw.) R. & S. and the other ubiquitous plants of the most silicious mountain-crests. In one depression we did find *Carex stylosa*, which we had known only about Port aux Basques; and Hotchkiss, tugging through a scrub-

thicket, brought back from a glade material of *Milium effusum* L., a grass we had had only from the region of Ingornachoix Bay. But we were much depressed at the anticlimax, for the western escarpments of both hills certainly looked like limestone and the geological map so indicated them.

(*To be continued*)

Erechtites megalocarpa in Rhode Island.—Ever since *Erechtites*, with its troublesome variations, received the attention of M. L. Fernald, botanists have been on the lookout for *Erechtites megalocarpa*, a new species which he described in Rhodora, xix: 24–27 (1917).

Although many plants have been examined by the writer, even sturdy specimens with large heads had disappointingly small achenes—none over 3 mm. long—and it was not until Sept. 8, 1925, that a group with fleshy leaves, basally thickened midribs, and abruptly narrowed involucres, gave promise of success. A brief examination showed that the achenes were 4–5 mm. long, had about 16 ribs, and that the plainly exserted style bases protruded at least three-tenths (.3) mm.

Without repeating the descriptive details already published, the fact that there were present at least seventeen of the nineteen characteristics attributed to the new species suggests that the plant may well be *Erechtites megalocarpa* Fernald.

The colony grew on a low bank near the ocean shore, on Sachuest Neck, a long point of land extending into the Atlantic at Middletown, R. I.—S. N. F. Sanford, Boston, Mass.

"Acer saccharum Marsh."—The name "*Acer saccharum* Marsh." (Arb. Amer. 4. 1785) has of late years been generally taken up as the name for our sugar maple. It may, therefore, be interesting to note that Marshall never published any such species. The name "*Acer saccharum*" does, it is true, appear as cited, but this was merely a typographical error for *Acer saccharinum* L. In the revised French edition of Marshall's work (Catalogue alphabetique des Arbres et Arbrisseaux), which appeared in 1788, the error was cor-

rected (p. 4) and the full citation "*Acer saccharinum* Linn." was given in place of "*Acer saccharum*." The use of the fictitious name "*Acer saccharum* Marsh." should, of course, be abandoned.—KENNETH K. MACKENZIE, Maplewood, New Jersey.

RAYLESS ASTER NOVI-BELGII.—During the fall of 1920 I observed growing in a swamp just below what is called Indian Fort in the borough of Groton, Conn., a very peculiar rayless form of *Aster novi-belgii* L. There were at least 200 plants in the colony, which was surrounded by patches of the typical form with radiate heads.

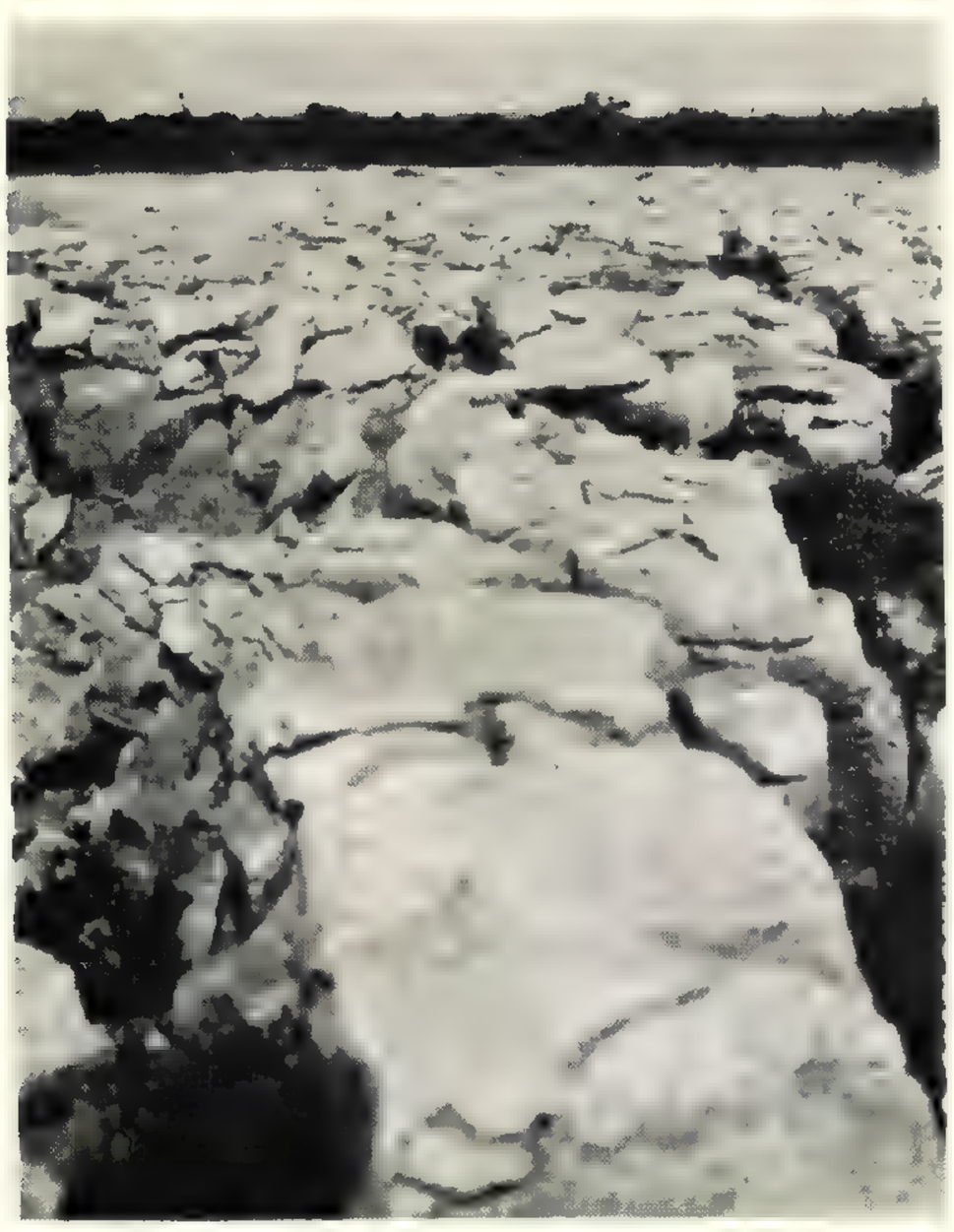
The distinguishing characters of the peculiar form are the total absence of ray-flowers and the striking purple color of the disc-flowers. Otherwise its general appearance is that of the typical form. As I have noticed the plants every year since 1920, it seems to me that the form must be constant.

Specimens have been deposited in the herbarium of the Connecticut Botanical Society.—K. P. JANSSON, Groton, Conn.

[In the Gray Herbarium there is a similar specimen collected at Charlottetown, Prince Edward Island, in 1912, by Fernald, Long & St. John. Professor Fernald states that at Charlottetown there was only a single clump of the plant.—Ed.]

LAMIUM PURPUREUM in Colorado.—Yesterday (April 30) I found *Lamium purpureum* L. in some quantity in the lower part of Bluebell Canyon, Boulder, Colorado. It is not cited in Rydberg's Flora nor have I seen it here before.—T. D. A. COCKERELL, Department of Biology, University of Colorado, Boulder, Colorado.

Vol. 28, no. 328, including pages 49 to 68, and no. 329, including pages 69 to 88, were both issued 11 May, 1926.



NORTHWESTERN NEWFOUNDLAND

FIG. 1 (upper). Western spur of Ha-Ha Mountain. FIG. 2 (left). Weathered limestone rock-barren back of Savage Cove. FIG. 3 (right). Bayard Long collecting *Ranunculus pedatifidus* var. *leiocarpus* on Ha-Ha Mountain.

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THE NEW ENGLAND BOTANICAL CLUB

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ERAGROSTIS HYPNOIDES AND E. REPTANS.

A. S. Hitchcock.

In revising the genus *Eragrostis* as represented in the United States I came in contact with the statement that *Eragrostis hypnoides* (Lam.) B.S.P. and *E. reptans* (Michx.) Nees were dioecious. Bush[1] established the genus *Neeragrostis* partly on the character of unisexual spikelets. Usually, in dioecious grasses, there is a difference in the aspect of the inflorescence between the staminate and pistillate plants and it would seem that a correlation should be established in *E. hypnoides* between the difference in the sexes and the aspect of the inflorescence. An examination of more than 100 sheets of specimens of the species throughout its range from eastern United States to Brazil showed without exception that the flowers were perfect. The anthers are surprisingly small, only 0.2 mm. long, but in good condition and pollen-bearing. This result led to an investigation of the statement that the plants were dioecious. Lamarck in his original description of *Poa hypnoides*, the basis of *Eragrostis hypnoides*, says nothing about this matter. However, in the floras of the United States the species has been going under the name of *Eragrostis reptans* until 1888 when the specific name *reptans* was replaced by the earlier *hypnoides* in the Preliminary Catalogue of New York plants.

I turned to the original description of *Poa reptans* by Michaux (1803), who was a careful observer, and found that he stated, as a part of the description, "floribus subaristato-acuminatis, dioicis." The locality is given as Illinois. Several years ago I had the opportunity of examining the grasses of the Michaux Herbarium at Paris. I

[1] Trans. Acad. St. Louis **13:** 178. 1903.

therefore consulted my note book in which I had recorded notes on these grasses. My notes stated that there were two sheets, one of staminate plants and one of pistillate. I also had a photograph of the specimens, which were collected at Kaskaskia [in Illinois, opposite St. Louis].

The conflict of evidence and of statements was now cleared away. Michaux's specimens did not belong to *E. hynoides* but were the same as what Nuttall later described as *Poa capitata* (1837).

An examination of the material of that species showed that it was uniformly dioecious and that there is a difference in aspect between the pistillate and staminate inflorescences and in the shape of the florets. Bush, in the article referred to above, illustrates the two kinds of spikelets. In strong contrast to *E. hypnoides*, the anthers are large, about 2 mm. long, thus being 10 times as long and probably 200 times as great in mass. This increased size of the anthers has probably developed as a coördinated necessity along with the separation of the sexes.

Flowers perfect; anthers 0.2 mm. long.....*E. hypnoides.*
Flowers unisexual; plants dioecious; anthers 2 mm. long.....*E. reptans.*

Eragrostis hypnoides (Lam.) B.S.P.

Poa hypmoides Lam. Tabl. Encycl. **1:** 185. 1791.
Megastachya hypmoides Beauv. Ess. Agrost. 74, 167, 175. 1812.
Eragrostis hypmoides B.S.P. Prel. Cat. N. Y. 69. 1888.
Neeragrostis hypmoides Bush, Trans. Acad. St. Louis **13:** 180. 1903.

The species was originally described by Lamarck "Ex America merid. Comm. D. Richard." Its range is from Quebec to Washington, south through Mexico and the West Indies to northern Argentina.

Eragrostis reptans (Michx.) Nees

Poa reptans Michx. Fl. Bor. Amer. **1:** 69. pl. 11. 1803.
Megastachya reptans Beauv. Ess. Agrost. 74, 167, 175. 1812.
Eragrostis reptans Nees, Agrost. Bras. 514. 1829.
Poa capitata Nutt. Trans. Amer. Phil. Soc. n. ser. **5:** 146. 1837.
Eragrostis capitata Nash in Britton, Man. 1042. 1901.
Neeragrostis weigeltiana Bush, Trans. Acad. St. Louis **13:** 178. 1903.
Eragrostis weigeltiana Bush, Trans. Acad. St. Louis **13:** 180. 1903.

Poa capitata was described from "the sandy beaches of the Arkansas." The species ranges from Kentucky to South Dakota and Texas; Dutch Guiana. Bush (loc. cit.) also cites specimens from

northern Mexico. A specimen from Bolivia (Rusby 230) cited by Bush is *E. hypnoides*.

Bush (loc. cit.) takes up the name *Neeragrostis weigeltiana* (Reichenb.) Bush, for the species that had been called *Eragrostis capitata* Nash, basing the name on *Poa weigeltiana* Reichenb. (in Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. **1**: 410. 1830). The latter name, however, is mentioned by Trinius only as a synonym of *Eragrotis reptans* Michx., and thus is not effectively published. The Weigelt specimen, collected in Surinam [Dutch Guiana] in 1827, bears a printed label as follows: "Poa Weigeltiana Rchb. Eragrostis: repens cespitosa, vaginis ad oras ciliatis, paniculae (vix pollicaris) spiculis lineari-lanceolatis 15–20 floris glumisque (hyalinis viride-) trinerviis acutis.—Affinis *P. thalassinae* K. H. B. sed. paniculata. Surinam leg. et exsicc. Weigelt. 1827. determ. Rchb." Some botanists would consider this to be effective publication. I do not know the date of distribution of the set. Bush (loc. cit.) quotes the description and gives a photograph of the specimen. In his key Bush distinguishes *Neeragrostis weigeltiana* from *N. hypnoides*, stating that the former is dioecious and the latter monoecious, but in his description of *N. hypnoides* he says, "spikelets dioecious."

Through the courtesy of Dr. Greenman, Curator of the herbarium of the Missouri Botanical Garden, I have had the opportunity of examining the specimen of *Poa weigeltiana* upon which Bush bases his description of *Neeragrostis weigeltiana*. This specimen belongs to *Eragrostis capitata* (*E. reptans*) as indicated by Bush. The specimen consists of two plants, one pistillate, the other staminate, both of which agree in all respects with *Eragrostis reptans* as found in the United States. This is the only collection known outside of the range from northern Mexico to South Dakota, and presents a problem in distribution.

Bureau of Plant Industry, Washington, D. C.

TWO SUMMERS BOTANIZING IN NEWFOUNDLAND

M. L. Fernald

(*Continued from page 111*)

Next day we felt no enthusiasm to start through the flies up the trail again and it was almost noon when we crawled listlessly up "Helix Slide" to the rocks above. Wiegand, Gilbert and Hotchkiss

started northward, to get at the outer escarpments if possible; Long and I struck due east to see what might turn up. The tableland (plate 154, fig. 1) stretched for miles to the east and three or four miles back a saddle extended south, connecting there with the northern side of the west-to-east tableland of Doctor Hill. Everywhere the surface was shattered angular rock with only the rarest of small erratics, thus indicating only trivial glaciation. At first it looked as if our impression of the night before was completely justified, but when we got to the top of a dome a splendid prospect was before us. For miles the tableland stretched to the north, northeast and east toward the distant Bluey Hills and Hummocky Hills, but in the foreground, separating the dome we were on from a broad flat dome to the east and southeast ("the Plains of Waterloo" of the local guides, because of the "great slaughters" of caribou which used to occur there) there was a deep gorge (Deer Pond Gulch) descending from a high basin to the east (Deer Pond), its brook tumbling by cascades for perhaps a mile, then swinging abruptly southward through a cañon and disappearing in the direction of Doctor Brook. Hastening toward this gulch we were soon on carpets of *Phyllodoce caerulea* (L.) Bab., one of the rarest alpine plants of Newfoundland, and we soon came to a tributary stream (Mans Humbug) which dashed precipitately into Deer Pond Brook. The thicket was full of the Shickshock *Streptopus oreopolus*, which we had got on Ha-Ha Mountain and Schooner Island; and with *Vaccinium ovalifolium* was the equally abundant and very distinct *V. nubigenum* Fern., another species supposed to be endemic to the Shickshock Mountains. *Carex stylosa* was so abundant that we were soon indifferent to it; and, stopping to eat a hasty lunch, we pulled from the wet moss of the rill the arctic *Deschampsia atropurpurea* (Wahlenb.) Scheele, new to Newfoundland, and *Epilobium palustre* var. *lapponicum* Hausskn., which Haussknecht records from Labrador but which we had never seen. The mossy bed of Mans Humbug brook was covered by a dense and almost uninterrupted carpet of *Epilobium Hornemanni*, the individual clumps often a foot or more across and very beautiful with their thousands of flesh-pink flowers.

The dripping slopes of Deer Pond Gulch were carpeted with continuous turf of *Saxifraga rivularis* L., interspersed with *Arabis alpina* and various Poas, the Saxifrage gigantic for this species, 1.5 dm. high, with leaves often 2 cm. across. *Gnaphalium norvegicum* Gunn., with

wands of purple-black or bronze heads, one of the arctic-alpine specialties of the Shickshocks, and the arctic-alpine *Epilobium lactiflorum* Hausskn., also new to Newfoundland, soon appeared; and we were puzzled by the big green *Angelica* which massed itself along the brook. Collections made later in the season both here and on Cape Onion show it to be an undescribed species nearest related to *A. ampla* Nels. of the Rocky Mountains. The *Conioselinum* of the brook-side seems to be *C. Gmelini* (Bray) Steud. of arctic Europe; and the great clumps of finely cut fronds belonged to *Athyrium alpestre* (Hoppe) Rylands, var. *americanum* Butters, one of the rare alpine ferns of western North America, heretofore known in the East only from the Shickshock Mts. This was as satisfactory as we could ask for and at 5 o'clock, realizing that we had a long tramp back to the trail, we set a limit beyond which we must not ascend, a dripping wall with rills breaking out every few feet. The rills were full of a *Montia* and from its habitat we hoped that we had true *M. fontana* L., but, alas, it is nothing but the same old *M. lamprosperma* Cham. which abounds all along the coast; but there was no mistake about *Saxifraga stellaris* var. *comosa* Poir. This high-arctic plant, with an extreme southern station on Mt. Katahdin, here formed little rows at the crests of the dripping shelves and it took much manoeuvering to get it without precipitating ourselves into the gorge. But it is beautiful material, showing the greatest diversity of habit and size of bulblets and a system of stolons such as we had never imagined.

We positively had to quit, but our emotions had undergone a remarkable change since noon; and when, after sliding through the nettles (*Urtica* sp.?), *Epilobium boreale* Hausskn. (another Alaskan and Shickshock Mt. specialty new to Newfoundland) and *Helix hortensis* below timberline, we got back to the house at 10:30, our respect for Bard Harbor Hill was further increased. Wiegand's party had got to the base of the upper escarpment and had brought back *Asplenium viride*, *Cryptogramma Stelleri* (Gmel.) Prantl, *Salix vestita*, *Draba arabisans* Michx., *Saxifraga Aizoon*, *Potentilla nivea* L. and the other conventional lime-types; and, best of all, they had *Astragalus Blakei* Eggleston, new to Newfoundland, a species supposed to be endemic to cliffs of northern New England.

After getting the material all through the first run of driers and into fresh driers and ventilators, we crossed Thursday evening to St. John's Island, to be ready for the "Home," which was due on Friday,

and there we enjoyed the hospitality of Mr. Haliburton, who comes for the summer from Bonne Bay for the cod-fishing, and Miss Haliburton, who had come on from Boston for a vacation. Luckily for us, news trickled along the coast that on Friday morning the "Home" had not yet left Rocky Harbor. Consequently, from breakfast-time to early evening we had an opportunity to explore the southern end of St. John's Island, keeping always where we could see the smoke of the steamer when she passed Pointe Riche and went into Port au Choix, an hour's run from us. St. John's Island is 3 miles across, a great doming plain of horizontal limestone, wooded in spots, but with much of the area an open barren deeply mantled with the finest of angular gravel, so deep and undisturbed that, although, where the cliffs have been washed by the sea (plate 154, fig. 2), the talus has been removed, where they have not been touched by the sea, the talus has accumulated from the bases quite to the tops of the cliffs (plate 154, fig. 3)—a condition strongly contrasting with that in regions which were denuded of their weathered rock-mantle during the Wisconsin glaciation.

If St. John's Island had been our first landing place in western Newfoundland, our day there would rank with the spectacular visit to Burnt Cape. We saw only a small area, perhaps one-tenth of the island, but the array of good things in that small patch was amazing. Surely, all but the most blasé would find interest in a flora containing *Puccinellia coarctata* Fern. & Weath., *Carex bicolor*, *C. lepidocarpa* Tausch and *C. microglochin*, *Juncus albescens*, *Salix reticulata* and *arctophila*, *Rumex occidentalis*, *Lesquerella arctica*, *Potentilla alpestris*, *Epilobium davuricum*, *Primula egaliksensis*, *Gentiana nesophila* and *Senecio pauperculus* var. *firmus* Greenm. But these were not all. *Cochlearia*, *Draba*, *Euphrasia* and *Antennaria*, as usual, gave us new problems; we got one *Arnica* which had now become familiar, *A. chionopappa*, but from a turfy slope a mile away Wiegand brought in another which is certainly *A. Griscomi* Fern., the very distinct thick-leaved species of the Mt. Logan Range in Gaspé. *Artemisia borealis* Pall., which we had known in Newfoundland only from the Port-à-Port area, was abundant; *Agrostis paludosa* Scribn., a local species described from the north side of the Straits, was here; but, as in three of its stations on the Labrador, it belied its name and grew on the driest of barrens. In a springy run in the gravel we got a most singular *Carex*, which I take to be the European *C. Oederi* var.

subglobosa (Mielich.) Richter, a plant Wiegand had found on Pointe Riche in 1910. Thoroughly typical *Botrychium Lunaria* grew side-by-side with var. *onondagense* (Underw.) Clute. The former was healthy and green, the latter much dried-out or scorched, as if frost or a drying wind had injured it; in other words, as if the southern var. *onondagense* were more sensitive than the usually more boreal *B. Lunaria*. It was late for *Taraxacum* but in the deep rain-swashed gravel we found one tiny species, dead-ripe, with red achenes nearly 5 mm. long, resembling *T. ammophilum* Nels. of Wyoming but with corniculate involucral bracts, the stipe of the mature pappus barely longer than the achenes and the latter decidedly larger than in the Wyoming plant. Again, as on Burnt Cape, Ha-Ha Point and Bard Harbor Hill, we hated to leave when we were only just beginning to clear away the species already familiar to us and to find the endemics or the epibiotics[1]; but we promised ourselves another visit three weeks later, when we should come back for further exploration of the Highlands of St. John under the guidance of Caleb Chambers.

The next move was to the extreme eastern end of the Straits, with Quirpon and Cape Bauld as the ultimate objectives. Profiting by our mistake on the Cape Norman trip, we took the selection of a skipper and boat into our own hands; and, after hearing from several independent sources that "Al Rose has the best boat on the Straits and the skipper is as reliable as his boat," negotiations were opened; and on Tuesday, August 4, with Albert Rose at the engine and his brother, Rev. Mackinlay Rose (home for a vacation before going to Montreal for graduate study) at the stern, we started for our second trip down the Straits. There was no balking at wind and tide (in fact the wind was hailed with glee and a sail run up to reinforce the engine), and, after calling in at Big Brook to ask Mrs. Diamond for a hot dinner, we put in to Cook Harbor in the afternoon for gasoline (65c. per gallon), stopped for the night at the comfortable home of Isaac Warren, and next morning Wiegand, Gilbert and Hotchkiss landed at Raleigh to explore Piton Point, the head of Ha-Ha Bay and the shores of Isthmus Cove, south of Burnt Cape; and Long and I returned to Ha-Ha Point and Burnt Cape. Our object was, in part, to secure mature material of many of the species found before, but our parties brought in a few novelties: *Salix cryptodonta* from another

[1] "species which are the survivals of a lost flora—for these I propose the name *Epibiotics*, which signifies survivors"—H. N. Ridley, Journ. Bot. lxiii. 182 (1925).

station; *Lathyrus maritimus* var. *aleuticus* Greene, the arctic and subarctic extreme with capillary stems and small leaflets, the first south of Labrador; *Viola renifolia* Gray, new to Newfoundland; and gigantic *Arnica pulchella* from the slopes of Ha-Ha Mountain, known at Raleigh as "Sun Flower"; and, of course, a full quota of puzzling Euphrasias.

After spending Thursday forenoon putting up our specimens in the big storehouse of Thomas Elliott, whose hospitality we enjoyed at Raleigh, we started in the afternoon for Quirpon (now-a-days pronounced Kar-poon). Before we reached Cape Onion a solid blanket of fog enwrapped us and until we reached Jacques Cartier Island, at the entrance to Quirpon Harbor, we saw almost no sign of shore. Quirpon is really a summer camp of fishermen and boasts no hotel; but we were fortunate in being allowed to camp at the big "room" of Mr. H. G. Maddock of Carbonear, who, with his storekeeper and housekeeper, occupied a little three-room bungalow. There was scarcely space for all of us, so the boys, Al and Kin Rose, Gilbert and Hotchkiss, camped and cooked their meals on Mr. Maddock's schooner; and the "old men," Wiegand, Long and I, were sumptuously entertained at the bungalow. Quirpon was one of La Pylaie's stamping-grounds. North of the channel lies Quirpon Island with high trap and slate hills, the highest, Cap Dégrat, rising 505 feet, the northern point of the island being Cape Bauld. South of Quirpon the hills are almost as high; and we began at once a preliminary exploration back of Little Quirpon (the Maddock establishment), next day explored Quirpon Island and Saturday the hills toward Griguet ("Cricket").

When we left Saturday evening, with many hills necessarily still unexplored, we had at least a representative collection. Many of the calcicolous specialties which abound from Burnt Cape southwestward had dropped out, and the comparatively southern flora of eastern and central Newfoundland had made its way quite to the extreme northern tip of the island: *Isoëtes Tuckermani* A. Br., of southern New England, growing in a pool with the arctic *Sparganium hyperboreum* Laested. and the splendid *Eriophorum Chamissonis* var. *aquatile* (Norman) Fernald,[1] at its first known station outside arctic Scandinavia; *Potamogeton Oakesianus* Robbins of the Pine Barrens of New Jersey and of New England and the southern *Callitriche heterophylla* Pursh in pools bordered by *Juncus stygius* var. *americanus* Buchenau and

[1] Fernald, RHODORA, xxvii. 207 (1925).

Drosera anglica Hudson; and so on until we had new northern limits for *Glyceria nervata* var. *stricta* Scribn., *Carex tenuiflora* Wahlenb. (farther north in Europe, etc.), *Carex leptonervia* Fernald, *Betula Michauxii* Spach and *Empetrum Eamesii* Fern. & Wieg. *Hordeum boreale* Scribn. & Sm., known only from the North Pacific and Bering Sea region and the Straits of Belle Isle, was abundant; *Carex Halleri* Gunn., new to Newfoundland, was a dominant turf-plant with *C. stylosa;* and on the inner slope of Cap Dégrat a tall and stiffish brown-topped *Carex* was pretty clearly a new hybrid, of *C. atratiformis* and *C. Halleri.* On the springy slope back of Little Quirpon typical *Carex glareosa* Wahlenb., one of the rarest of plants, abounded; and by a brook slightly to the eastward the arctic *C. bipartita* All. (*C. Lachenalii* Schkuhr),[1] another species "new to Newfoundland," was in perfect development. On springy slopes both on the mainland and the island *Senecio pauciflorus* Pursh, another novelty, and *Barbarea orthoceras* Ledeb. were common with *Epilobium davuricum* and the ubiquitous *Alchemilla vulgaris* var. *filicaulis* (Buser) Fern. & Wieg. On the exposed crests of both mainland and island *Draba nivalis* hid in the gravel with *Carex glacialis;* on the top of Cap Dégrat we got *Saxifraga rivularis* and *Astragalus alpinus;* and in the thicket back of Little Quirpon the puzzling *Hieracium* of Big Brook, here in splendid development, a plant exactly matching material sent by Porsild from Greenland as *H. groenlandicum* Almq. It was obvious that La Pylaie did not exhaust the possibilities of Quirpon and equally obvious that we had merely got a glimpse of the region; but our schedule called for Sunday at Ship Cove in the lea of Cape Onion and after supper we moved westward to Cape Onion.

Ship Cove lies east of the tip of Cape Onion and opens upon Sacred Bay. We there had a splendid home with the family of Mr. and Mrs. Henry Decker and when it was time to leave on Wednesday morning we were as sorry to say good-bye to the Decker family as we were to leave Cape Onion. We had had fine botanizing, an intelligent home and delicious food, and in the evening, as we worked over our presses, we had greatly enjoyed the conversation and the limitless anecdotes of Mr. Decker. He is a born *raconteur*, enthusiastic, graphic and with a keen sense of humor; and we were inclined to let our evening work prolong itself unduly as we listened to his vivid accounts of the fights on this "treaty coast," when, years ago, the French fishermen attempted

[1] See Mackenzie, Bull. Torr. Bot. Cl. 1. 348 (1923).

to claim their treaty rights. We constantly wished that we had a phonograph to record these stirring tales and especially to catch the full charm of the Newfoundland fisherman's dialect. One simple item will give some idea of the latter: "Hit's a fonny t'ing about dese 'ere tonnerbolt. W'y, one o' dem feller 'e struck de church over 'ere to Karpoon; 'e busted t'ru de doe han' den 'e went right out de back o' 'e."

We had planned too much for our limited time and actually did not get to the tip of Cape Onion. On the exposed crests between there and Ship Cove the dwarf Euphrasias were perplexing, some probably referable to the White Mountain *Euphrasia Williamsii* Robinson, with chocolate-colored corollas, others as small but with greenish yellow corollas, and others pink or white. Our presses were already so full, from Isthmus Cove, Burnt Cape, Ha-Ha Point and the Quirpon region, that it was necessary to spend half our time simply catching up on drying; but Monday afternoon we crossed over to Great Sacred Island and got some good things, including *Salix myrtillifolia* var., *brachypoda* Fern. of Table Mt., Port-à-Port Bay, *Epilobium lactiflorum* and *Gnaphalium norvegicum;* and, new to Newfoundland, *Parnassia Kotzebuei* C. & S. On Tuesday, Wiegand, Long and I went to Anse aux Sauvages on the Pistolet Bay side of the Cape, where we had seen from the boat a promising cove with high talus and springy swales. In crossing the "mesh" from Sacred Bay we were interested in a *Carex* with long pendulous spikes. The material proves to be quite identical with authentic specimens of a hybrid of *C. aquatilis* and *C. salina* var. *pseudofilipendula* (Blytt) Kükenth. The latter extreme variety, recorded only from northern Norway, has been collected on the northern shore of the Straits (Blanc Sablon, 1910, *Fernald & Wiegand*, no. 2818) and in Gaspé (Cape Rosier, July 28, 1882, *J. Macoun*) and its presence in northern Newfoundland may safely be surmised. At one very wet stretch there was an abundance of *C. tenuiflora* and *C. vesicaria* var. *Raeana* (Boott) Fern., the latter rare in Newfoundland. We were attracted to a dryish swale because of a *Hieracium*, but very promptly Long detected the arctic-alpine *Botrychium lanceolatum* (Gmel.) Ångstr. and then *B. matricariaefolium* A. Br., both new to Newfoundland.

But Anse aux Sauvages itself was the choice spot. It looked so full of possibilities that we realized at once that unless we ate them promptly we should soon forget about our lunches. So we sought a dry bank

and proceeded to sit down on *Arabis Drummondi* var. *connexa* (Greene) Fern., a Rocky Mountain plant which we had not had from Newfoundland; after that we wasted little time over lunch. The trap cliffs of Anse aux Sauvage are as fine as any on the coast, high and vertical, but with extensive talus and enough chimneys and pockets to support the best of species; and if we had come to them a few days sooner we should have counted this as one of the greatest localities, on account of *Draba nivalis*, *Ranunculus pedatifidus* var. *leiocarpus*, *Parnassia Kotzebuei*, *Carex Halleri*, and many of the other choice species. The springy swale at the bases of the cliffs is as rich and fascinating as that on Ha-Ha Point and the great specialty there is the Kamtchatkan *Stellaria florida* Fischer, which we had known in America only from the Shickshock Mountains.

One of the younger Deckers had shown us a piece of soapstone picked up at the "bottom" (what we should call the head) of Mauve or Noddy Bay, so when we left on Wednesday morning we proceeded to Mauve Bay, again hoping to find an outcrop of serpentine or, at least, of soapstone. But there was not enough to support a distinctive flora. On a springy slope at the head of the bay, however, we got two species new to the island: *Epilobium brevistylum* Barbey, the first time east of the Rockies, and *Galium Brandegei* Gray, another cordilleran species but already known in the East, in northern Maine and Gaspé. *Senecio pauciflorus* was abundant and on the slaty talus of Cape Raven it was accompanied by *Erigeron borealis* (Vierh.) Simmons, a species of arctic Norway and Greenland, which Dr. Huntsman had already collected at Quirpon Harbor. Stopping over at Cook Harbor and Cape Norman for more material of some of the specialties, we left the former place at 1.30 p.m. and, maintaining a steady rate of nine miles an hour and calling in to visit no cousins, were back at Flower Cove for supper.

Albert Rose could not take us on the next trip but, although this was a great disappointment to us, we were wholly satisfied, in fact quite delighted with our next skipper. Leaving Flower Cove with John Whalen and his motor-boat on Wednesday, August 19, we were at Bard Harbor in the early afternoon and, accompanied by him and by Caleb Chambers, as guide, had established a camp in Deer Pond Gulch by Thursday noon. Starting in where we had left off three weeks earlier, we explored Bard Harbor Hill for three days, from the Overfall of Deer Pond Brook on the south to Southwest Gulch on the

north and the foot of the upper escarpment on the west; and, when we came down Saturday night, we had at least ten additions to the Newfoundland flora: *Poa laxa* Haenke, *Carex lenticularis* var. *albi-montana* Dewey, *Salix herbacea* L. and two other willows (one of them described in Part III), *Cerastium cerastioides* (L.) Britton, *Sibbaldia procumbens* L., *Cassiope hypnoides* (L.) D. Don, *Veronica alpina* var. *unalascensis* C. & S., and a new species of *Lactuca* from the northern limit of the genus in eastern America. Not actually new to Newfoundland, but previously known from only one or a few stations were *Woodsia alpina* (Bolton) S. F. Gray, *W. glabella* R. Br., *Carex bipartita*, *Habenaria viridis* var. *bracteata* (Muhl.) Gray, *Oxyria digyna* (L.) Hill, *Arabis Drummondi* Gray, *Alchemilla vulgaris* var. *vestita* (Buser) Fern. & Wieg., *Galium kamtschaticum* Steller and *Solidago lepida* DC.; and we had materially extended northward the ranges of *Pteretis nodulosa* (Michx.) Nieuwl., *Osmunda Claytoniana* L. and *O. cinnamomea* L., *Nemopanthus mucronata* (L.) Trel., *Eupatorium maculatum* var. *foliosum* (Fern.) Wieg. and *Lactuca spicata* (Lam.) Hitchc. *Streptopus oreopolus*, which had never been known in fruit, was loaded with cherry-red slightly elongate berries; and *Vaccinium nubigenum* proved to have the richest and most grape-like fruit we had ever tasted in the genus, its near relative, *V. ovalifolium*, having berries of decidedly disagreeable flavor, known to Caleb Chambers as "Mathers." We had had a most interesting trip, and if we could have taken care of the specimens, should have stayed on to collect dozens of other novelties. And we had been greatly interested in the abundance among the broken rocks of the tableland of the Rock Ptarmigan, a bird which was new to us; and we were specially indebted for fresh meat to a weasel which lived about our camp, for the very first morning when we came out of our tents we found at our front door a fine big rabbit dead, but still warm, with a tell-tale incision at the throat. Another semi-botanical item, besides the luscious quality of the fruit of *Vaccinium nubigenum*, which interested us, was the smoking tobacco used by Chambers. We had noticed, whenever the wind wafted us a whiff from his pipe, a most unusual sweetish and rather fascinating fragrance. This, he explained, was from "Pitnagen" which he was smoking; and when he gathered some and brought it to us with the explanation that he had learned it from the famous Micmac guide, Mattie Mitchell, we recognized it as *Aster puniceus*, var. *oligocephalus* Fern. Probably the variety is not significant, and smokers may try any form of *A. puniceus*.

Doctor Hill, the southern mass of the Highlands of St. John has, near the northern end of its west wall, a very striking gash or chimney (plate 155, fig. 1) extending from the summit-tableland two-thirds the way down the precipitous escarpment and visible from a long distance. From the time Wiegand and I first saw this dripping chimney in 1910 we had felt that it must be a good place, but difficult to reach. We now learned that it was "John Kanes's Ladder," from the circumstance that that veracious gentleman, a pioneer in the region, claimed to have ascended the mountain by this precipitous route (plate 155, fig. 3). No one had done so since and when Long, Chambers and I started for it we had no intention of doing anything to take the lustre from John Kanes's glory. But botanically the western escarpment of Doctor Hill was a great place, and many days of further exploration there will be necessary to bring together all its relic and endemic species. Starting in at the base of the slope, a little to the south of Doctor Brook we promptly found *Equisetum pratense* Ehrh. and *Osmorhiza divaricata* Nutt., common enough in Gaspé but not recorded from Newfoundland; and in mossy glades in the woods, while following up puzzles in *Corallorhiza, Orobanche* and *Monotropa Hypopithys* L., we came upon fruiting *Calypso bulbosa* (L.) Oakes, very rare and scattered but new to Newfoundland. It was a long and tough pull through scrub-forest below the big escarpment (plate 155, fig. 2) and when we finally reached the calcareous talus it was mid-afternoon. We promptly condemned our own stupidity in not having brought blankets and food, for we had struck a rich alpine garden, full of the choice things of calcareous rock and talus, but mostly now familiar: *Woodsia alpina, Polystichum Lonchitis, Cryptogramma Stelleri, Draba rupestris, Parnassia Kotzebuei, Potentilla nivea* var. *macrophylla* Ser., *Oxytropis campestris* var. *johannensis*, unusually luxuriant (with leaves more than 2 dm. long), *Gentiana propinqua*, gigantic *Solidago multiradiata* Ait. (4.5 dm. high, with corymbs 1 dm. high and nearly as broad) and *Senecio pauciflorus*. And when we began to find species which we had not known from north of Bay of Islands, the Humber or the Exploits, *Anemone multifida* var. *hudsoniana* DC., *Potentilla pectinata* Raf. and *Hedysarum alpinum* var. *americanum* Michx., for example, and *Draba pycnosperma* Fern. & Knowlt., heretofore known only from Percé at the tip of the Gaspé Peninsula, we naturally regretted that we had time only to snatch the most obvious plants and these from only one extremely limited

area of cliff and talus. Traveling was difficult, walking and tumbling in the bushy talus or along the half-inch shelves of the cliff; and when we finally got around to John Kanes's Ladder, a dripping slaty wall, vertical and covered with vegetation, it was already late and we must travel rapidly if we were to reach the shore-trail before dark. But we had to stop long enough to get the *Epilobium* which, spire-like or savin-like, stood on the wet lower end of the Ladder. It was quite strange to us, not only in its peculiar fastigiate branching but in its very fleshy leaves; and by the beautiful fleshy bulbs at the bases of its stems it at once showed its affinity. It is a new species nearest related to the rare Rocky Mountain *E. saximontanum* Hausskn.

There are very many more endemics or epibiotics in the region of John Kanes's Ladder and the limestone escarpments of Doctor Hill; but the party which goes to find them will do well to profit by our experience and take a tent and food enough for two or three days. And it is hoped that they will be early enough to get in flower and young fruit the willow of the talus which so much interested us. In 1865, the great student of willows, Andersson, described *Salix Barclayi*, **S. latiuscula*,[1] as a subspecies of the Alaskan shrub, with "*Hab.* in Terra Nova (DE LA PYLAIE)." It is said to appear intermediate between *S. lucida* and *S. cordata*, having the oval subcordate leaves 1½ inches long, 1 in. broad, lustrous, short-acuminate, etc., and differing from the Alaskan species in its oval leaves and in having sparingly tomentose capsules. La Pylaie had but a single specimen; it is not known just where he got it; and *S. Barclayi*, **S. latiuscula* has remained a puzzle. On the talus of Doctor Hill, and likewise on the escarpment of Bard Harbor Hill, is a beautiful shrub which in foliage matches Andersson's description but we need young material. The few battered and weather-worn capsules which we secured are now quite glabrous, but that may be the result of hard usage. The identity of the shrub is now a problem; and it is not clear that La Pylaie actually visited Doctor Hill. In describing Ingornachoix Bay he wrote: "mais on la peut néanmoins reconnaître par les deux hautes collines situées dans l'intérieur des terres au nord-est, qui dominent toutes les autres parties plus avancées, et se coupent d'une manière très-brusque à leur extrémité: on les appelle les *montagnes* ou *hauteurs Saint-Jean;*" and again he referred to "l'embrouchure d'une rivière assez considérable, surtant d'un lac situé au midi des hauteurs de

[1] Anderss. Mon. Sal. 165 (1865).

Saint-Jean.'"[2] La Pylaie explored for eight days in this region, but whether he actually ascended the hills and whether our shrub is what he collected as the basis of *Salix Barclayi*, **S. latiuscula* are still unsettled questions.

Wiegand, Gilbert and Hotchkiss had followed up Doctor Brook; and during the next two days, when the sea was altogether too rough for us to cross to St. John's Island, as we had earnestly hoped to do, we scoured the lower levels and also got at the lower escarpment of Bard Harbor Hill. Nothing spectacular was found, but Gilbert and Hotchkiss extended southward the range of *Ranunculus hyperboreus* by finding it in a beaver-pond near the Yellow Marsh; and we established new northern limits for *Cystopteris bulbifera* (L.) Bernh., *Onoclea sensibilis* L., *Muhlenbergia racemosa* (Michx.) BSP., *Alopecurus aequalis* Sobol., *Rynchospora alba* (L.) Vahl., *Carex Crawfordii* Fern., *C. projecta* Mackenzie, *Juncus effusus* var. *Pylaei* (Laharpe) Fern. & Wieg., *Ranunculus Macounii* Britton and *Epilobium nesophilum* Fern.

Our time being exhausted and St. John's Island now out of the question, we returned to Flower Cove on the 27th, stopping to collect the better things from Dog Peninsula, for which Long and I had a morbid sentiment after the grounding of the "Glencoe" there; and in passing through Derby's Tickle we landed to explore Otter Pond, a large shallow pond covering limestone pavement, there securing remarkably fine fruiting material of *Myriophyllum alterniflorum* DC. and *M. exalbescens* Fern. As soon as the specimens were cared for we allowed ourselves one more day in the field. Long and I went out locally for mature material of various things and Wiegand and Hotchkiss proceeded to East Brook, entering St. Barbe Bay, for aquatics. They got a splendid collection, including three of the most local species of Newfoundland, *Potamogeton Friesii* Rupr., *Zannichellia palustris* var. *major* (Boenn.) Koch and *Callitriche hermaphroditica* L.; and, new to Newfoundland, though long expected, *Potamogeton vaginatus* Tausch. Soon everything was packed and ready for the return home, but during a last constitutional walk to the swimming pond, south of the Rock Marsh, Long and I had our turn with *Potamogeton vaginatus*, but that was mild sport compared to the collecting of a strange pondweed with large winter-buds, for this proves to be the extremely rare *P. Hillii* Morong, a species previously

[2] La Pylaie, *Voyage a l'Ile de Terre-Neuve*, 73–75 (1825).

known from western New England to the Great Lake region, of which the winter-buds have been unknown.

Thus, on our last walk, after the trunks were packed, we were finding species "new to Newfoundland." Our summer was over and Wednesday afternoon, September 2, the water being calm, John and Wallace Whalen took us and our baggage by motor-boat across the Straits to "the Labrador" to catch the "North Shore," which would sail early Sunday morning from Bradore for Quebec. It was necessary to be forehanded for at this season the weather is most uncertain and, as it proved, that was the last day for a week in which a small boat could cross the Straits. To Wiegand and me it was a particularly enjoyable crossing for we were returning to the Grant's at Blanc Sablon, where Kidder and I had spent a most happy week in 1910 and where Wiegand had enjoyed the hospitality over a week-end. And the hospitality has in no way lessened. Mr. Edwin Grant, now claiming to be an old man, has retired from the active management of the big fishery but he is as alert and apparently as energetic as ever; and the active management has devolved upon his son, Mr. Sam. Grant. The three and a half days of our visit at Blanc Sablon, the renewal of botanizing at this fascinating corner of Labrador, the evenings of music and radio with Mr. and Mrs. Sam. Grant, and the hospitality shown our party by Mr. and Mrs. Hubert Cashman and by Mr. Butts, the Customs officer, will never be forgotten; but, forming no real part of our Newfoundland exploration, they can simply be mentioned here.

In 1924, Long and I estimated that, in order merely to take the cream from the flora of western Newfoundland, ten expert botanists would need fifty seasons. Our work of 1924, with three botanists, and of 1925, with five to seven (average six) has only slightly reduced the necessary time. We left Burnt Cape, Ha-Ha Point, Quirpon, Cape Onion, Boat Harbor, Big Brook, 4-Mile Cove, St. John's Island, Bard Harbor Hill and Doctor Hill always with keen realization that there was plenty more to do. Every time we landed on the shore of the Straits we found new specialties; the islands near St. John's Island have not been touched; Caleb Chambers tempted us with descriptions of the Bluey Hills, the Hummocky Hills and other regions east of the Highlands of St. John; and we did not once set foot on the great tablelands of the Long Range. There is plenty to do; the region, retaining a large remnant of the ancient flora which elsewhere

NORTHWESTERN NEWFOUNDLAND.

FIG. 1 (upper). Rock-mantle on tableland of Bard Harbor Hill. FIG. 2. (left). Horizontal limestones, washed by the sea, St. John's Island. FIG. 3. (right). Horizontal limestones, with undisturbed talus, St. John's Island.

NORTHWESTERN NEWFOUNDLAND.

FIG. 1 (upper). John Kanes's Ladder and escarpment to the south, Doctor Hill. FIG. 2 (left). Limestone escarpment of Doctor Hill, northeast of John Kanes's Ladder. FIG. 3 (right). Looking up John Kanes's Ladder, with rotted rock-walls.

across America was mostly destroyed by the advances of Pleistocene ice, is full of endemics and epibiotics. We have brought back in two seasons more than 175 species never before known from Newfoundland, but there are hundreds of others yet to be found; and many of them, like many already known, will throw a vivid light upon the relative ages and the rate of evolution of species.

Explanation of Plates 153–155

Pl. 153. Fig. 1 (upper). Western spur of Ha-Ha Mountain, showing ancient weathering and lack of recent planing by an ice-sheet. Fig. 2 (left). Deeply weathered limestone rock-barren back of Savage Cove, characteristic near sea-level in northwestern Newfoundland, the rotted rock-mantle not removed by a recent ice-sheet. Vegetation here occupies the deep fissures, but in areas where the mantle has disintegrated into fine gravel and clay the plants are more numerous and are generally dispersed. Fig. 3 (right). Bayard Long collecting *Ranunculus pedatifidus* var. *leiocarpus*, western face of Ha-Ha Mountain.

Pl. 154. Fig. 1 (upper). On the tableland of Bard Harbor Hill, deeply mantled with angular blocks and gravel; Doctor Hill to the south. Fig. 2 (left). Horizontal limestones, washed by the sea, St. John's Island. Fig. 3 (right). Horizontal limestones, beyond the reach of the sea, St. John's Island; the talus not removed by sea nor glacier.

Pl. 155. Fig. 1 (upper). John Kanes's Ladder and limestone escarpment to the southwest, Doctor Hill. Note the great accumulation of talus. Fig. 2 (left). Escarpment of Doctor Hill, northeast of John Kanes's Ladder. Note the high talus. Fig. 3 (right). Looking directly up John Kanes's Ladder. Note the long-weathered and rotted rock-wall.

(*To be continued.*)

A NEW NORTH AMERICAN VARIETY OF CYSTOPTERIS FRAGILIS.

C. A. Weatherby.

Cystopteris fragilis (L.) Bernh., var. **laurentiana**, n. var., planta plerumque valida, frondibus 3.5–4.8 dm. altis, laminis 19–34 cm. longis, 7–13 cm. latis, rarius minoribus; stipitibus rubro-tinctis; pinnulis et saepe earum lobis obtusis, indusiis et saepe rhachibus pinnarum subtus minute glandulosis; paleis rhizomatis eglandulosis.

Usually a large plant, the fronds 3.5–4.8 dm. high, their blades 19–34 cm. long, 7–13 broad, only occasionally smaller; pinnules and often their segments obtuse; stipes tinged with red; indusia and frequently the rachis of the pinnae beneath, minutely glandular; scales of the rhizome not glandular-margined.—Newfoundland: shaded limestone rocks in woods on southwestern slope of Bard Harbor Hill, Highlands of St. John, July 27, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,214; wooded steep shady slope of

Mt. Moriah, Bay of Islands, Aug. 11, 1924, *Fernald, Long & Dunbar*, no. 26,152; wet shaded rock, Birchy Cove (Curling), Humber Arm, July 6, 1910, *Fernald, Wiegand & Kittredge*, no. 2329; ravine, Green Gardens, Cape St. George, July 22, 1922, *Mackenzie & Griscom*, no. 11086. QUEBEC. RIMOUSKI COUNTY: shaded or wet limestone, limestone-conglomerate, and sandstone ledges, Bic, July, 1907, *Fernald & Collins*, nos. 803, 811, 814; limestone-conglomerate cliffs, headland north of Baptiste Michaud's, Bic, July 18, 1904, *Fernald & Collins*, 2 sheets, TYPE in Gray Herb. MATANE COUNTY: hornblende-schist ledges along Cap Chat River, Joffre, July 20, 1922, *Fernald & Pease*, no. 24,790. GASPE COUNTY: calcareous cliffs, gorge of River Ste. Anne des Monts, Aug. 15, 1906, *Fernald & Collins*, no. 285; falaises de la Montagne St. Alban, alt. env. 250 m., July 19, 1923, *Marie-Victorin, Rolland-Germain, Brunel & Rousseau*, no. 17040; blocs isolés de conglomérat, Ile Bonaventure, Percé, July 28, 1923, same collectors, no. 17042. MAGDALEN ISLANDS: dans les rochers de gypse, Cap-aux-Meules, Sept. 8, 1919, *Marie-Victorin & Rolland-Germain*, no. 9333. CAPE BRETON ISLAND: dolomite ledges west of Dingwall, Aug. 18, 1914, Nichols, no. 974; moist sink-holes in plaster, South Ingonish, Aug. 6, 1914, *Nichols*, no. 678.

The variety here proposed adds one more to the many endemic forms detected by Prof. Fernald and his co-workers in the region about the Gulf of St. Lawrence. From all other east-American forms of *C. fragilis*, it is at once distinguished by its glandular indusia. The glands are small and tend to occur toward the base of the indusium, and are sometimes hard to see in dried material; but examination of a few indusia under the binocular will reveal them. From typical *C. fragilis*, which grows with it in the Laurentian area, and into which it passes, it can usually be readily distinguished by its greater size and blunt pinnules, characters which, Prof. Fernald states, give it in the field the aspect of a *C. bulbifera* without the long apex of the frond. *C. fragilis* var. *sempervirens* Moore (var. *canariensis* (Willd.) Milde) of the Azores and Canary Islands also has glandular indusia, but, though attaining the dimensions of var. *laurentiana*, it is more slender, the stipes are always pale, the scales of the rhizome are glandular-margined, and the leaf-form, though more or less variable, is never that of the American plant.

Schinz & Thellung, following Chiovenda[1] and Farwell,[2] write *Cystopteris Filix fragilis*, for the reason that the trivial name is printed "*F. fragile*" in the first edition of the Species Plantarum and that the same abbreviation is there used for the universally accepted

[1] Ann. di Bot. i. 210 (1904). Passage not seen; citation from Schinz & Thellung
[2] Ann. Rep. Mich. Acad. Sci. vi. 200 (1904).

trivial names Filix-mas and Filix-femina.[1] There is one point in this connection, however, the significance of which these authors seem to have overlooked. In every other case in which Linnaeus uses a double specific name composed of a substantive and an adjectival element, the latter agrees in gender with its own noun, not with the name of the genus, if the two differ.[2] *Asplenium Ruta-muraria*, *Lysimachia Linum-stellatum*, and *Vaccinium Vitis-idaea* are examples. If Linnaeus had intended a double trivial name in this case, he would presumably have followed his otherwise invariable custom and written "*F. fragilis.*" Instead, we find "*fragile*," agreeing not with *Filix*, but with *Polypodium*, the genus under which he placed the species; and the "*F.*" is omitted in the second edition of the Species Plantarum, though retained for "*F. mas*" and "*F. femina*," Furthermore, *Filix mas* and *Filix femina* were phrase-names universally known in Linnaeus's time; but there is nothing to indicate, at least in the Linnaean citations, that "*Filix fragilis*" was anything of the kind.

Under these circumstances the natural inference is that the "F." of the first edition of the Species Plantarum was an error, corrected by Linnaeus at the first opportunity. It did, indeed, persist through several editions of the Systema; why I do not know unless through inadvertence. At any rate, it seems best to give the familiar "*C. fragilis*" the benefit of the doubt, and to retain it, rather than to displace it on doubtful evidence; and I have accordingly retained it here.

Gray Herbarium.

Euphrasia Oakesii in Hamilton Inlet, Labrador.—During the summer of 1925 I made a small collection of plants from the region around Hamilton Inlet, Labrador. Subsequent study proved one specimen to be *Euphrasia Oakesii* which, according to the revision of the genus by Fernald and Wiegand (Rhodora, xvii. 185), had not been reported before north of Battle Harbor, about 200 miles south. The plant was found on August 8, at Indian Harbor at the mouth of the Inlet, growing quite abundantly in mossy turf in a notch of the ridge of rock that forms the backbone of the island. The situation

[1] Vierteljahrss. Naturf. Gesellsch. Zürich lxi. 414 (1916).
[2] See Nieuwland's list of such names, Am. Mid. Nat ii. 100–116 (1911).

was protected on the north by a small boulder, but was open to the south and east.—G. Douglas Krumbhaar, Harvard University.

Viola primulifolia in Berkshire County, Massachusetts.—In June 1924 the writer, while on a botanical collecting trip in Otis township, Berkshire County, Massachusetts, found a colony of several hundred plants of *Viola primulifolia* L. along the south shore of Great Lake. This species is not included in the "Flora of Berkshire County," recently published by Mr. Ralph Hoffmann. Several of the plants collected were sent to Mr. Hoffmann for examination, and were later deposited by him in the herbarium of the New England Botanical Club.—O. M. Freeman, Bureau of Plant Industry, Washington, D. C.

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THE BULBIFEROUS FORM OF LUZULA MULTIFLORA.

THEO. HOLM.

A SPECIES of *Luzula*, which the writer cannot distinguish from the European *L. multiflora* (Ehrh.) Lej., is very frequent in the vicinity of Washington, D. C., notably in adjoining Maryland. It shows the same structure of the inflorescence and flower, but the perianth is somewhat paler, and, moreover, it is frequently bulbiferous. In Buchenau's treatment of the *Juncaceae*,[1] where *Luzula multiflora* is referred to *L. campestris* (Lam.) DC. as a variety, a bulbous plant is mentioned, the so-called *L. campestris* var. *bulbosa* Wood.[2] Buchenau, however, did not consider this as a variety proper, but merely as a form, corresponding with a similar form of the Australian variety *migrata* Buchenau "caulibus saepe bulbosis" (l. c. p. 94). Since then some other *Luzulae* have been observed to exhibit a smiliar bulbous structure according to Fernald and Wiegand:[3] "occasionally in vars. *macrantha, comosa, congesta,* and *multiflora* in America," and furthermore Professor Fernald has kindly informed us (in litteris) that he has also observed the development of bulbs in var. *Mannii* from Guinea, and in *Luzula subsessilis* (S. Wats.) Buchenau. The production of bulblets, however, is said to be more general in the var. *bulbosa* Wood than in any of the others.

Regarding the geographical distribution of the var. *bulbosa* Fernald and Wiegand give this as "New Jersey and southeastern Pennsylvania to Georgia, west to Kansas and Texas, and according to Professor

[1] Das Pflanzenreich by A. Engler IV. 36. Leipzig 1906, p. 95.
[2] Wood, A. Class-book of Botany. New York 1866, p. 723.
[3] M. L. Fernald and K. M. Wiegand. The variations of *Luzula campestris* in North America. RHODORA Vol. 15. 1913, p. 38.

Fernald (in litteris) the distribution has been extended north through southern New England into southeastern Massachusetts, where this variety forms a part of the characteristic flora of coastal plain dispersal. Thus so far as concerns the geographical distribution the bulbiferous *Luzula*, which we intend to describe, might well be referable to var. *bulbosa* Wood, if it were not for the fact that our material shows the perianth-leaves to be distinctly longer that the mature capsule. We remember that Wood's diagnosis calls for a plant with "sepals shorter than the globular capsule," and as stated by Professor Fernald (in litteris) this character and the production of numerous bulbs distinguish it at once.

With reference to our plant we can find no other character of importance by which to distinguish it from *Luzula multiflora* than the frequent development of bulbs. When we consider *Luzula multiflora* Lej. as a species distinct from *L. campestris* DC., contrary to the view of Buchenau and so many other prominent writers on the genus, this has always been our opinion since the time, when in Denmark we had the opportunity to study both species occurring in abundance. It would not be the place here to discuss in detail the characters by which these two species may be distinguished, but the following citation from Lange's Conspectus Florae Groenlandicae (Copenhagen 1880, p. 125) contains the most essential points: "*Luzula multiflora* Lej. Crescendi modo dense caespitoso, multicauli, glomerulis densifloris, erectis, florendi tempore magis serotino bene distincta mihi videtur a *L. campestri*, quae rhizomate repente, caulibus florigeris sparsis, glomerulis pendulis, magis laxifloris instructa est."

In Denmark the flowering time is so different, that *Luzula campestris* has almost mature fruits, when *L. mutliflora* begins to bloom. We also wish to refer to Lindman's excellent work on the Flora of Sweden,[1] where they are described as distinct species. The geographic distribution seems to be in favor of the view that they represent distinct species, for according to Buchenau (l. c.) typical *Luzula campestris* is only frequent in temperate Europe; from countries outside of Europe, Buchenau saw material only from Algiers, Nilgherries, Altai and Trapezunt. On the other hand *Luzula multiflora* abounds in temperate Europe, Asia and North America. In the paper by

[1] Lindman, C. A. M. Svensk Fanerogamflora. Stockholm 1918, p. 157. See also Buchenau: Kritisches Verzeichniss aller bis jetzt beschriebenen Juncaceen. Naturwiss. Verein Bremen 1880, p. 101, where this author considered it most natural to recognize *Luzula campestris*, *L. multiflora* and *L. pallescens* as distinct species.

Fernald and Wiegand (l. c.) *Luzula campestris*, although apparently absent from North America, as it seems according to the statement of Buchenau: "für N. America nicht sicher," is treated as a polymorphous species with nine varieties, including *L. multiflora*, said to be the most widely distributed of these.

Considering the varieties enumerated by Fernald and Wiegand (l. c.) these are, according to our opinion, closely related to *Luzula multiflora* with exception of *L. comosa* Meyer including the varieties: *congesta* Wats. [not to be confounded with *congesta* (Thuill.) Buchenau], *laxa* Buchenau, *macrantha* Wats. and *subsessilis* Wats., for the habit of these is very different from that of *L. multiflora* and *L. campestris*. Buchenau himself kept the *comosa*-alliance separate from that of *campestris*, and he even referred the var. *subsessilis* Wats. to another section describing it as a species *L. subsessilis* (S. Wats.) Buchenau next to *L. caricina* E. Mey. (l. c. p. 67). It seems strange that Buchenau separated *Luzula subsessilis* from the *comosa*-alliance, for as shown by the diagnoses, Buchenau was well aware of the singular structure of their inflorescence "spica infima saepe remota, longe stipitata," besides the structure of the single spikes, as compared with those of the other species. Such morphologic structures are important to classification, but they are frequently overlooked.

With regard to the development of bulbs we have seen above, that this is not restricted to a single species or variety, whatever it be, but that it occurs in *Luzula multiflora vera*, in *L. comosa* including its varieties, and in some few others. The structure of these bulbs was described by Buchenau[1] and his material came from Montenegro and New Holland. The plants having been dried did not show the structure with sufficient distinctness, thus the diagnosis: "Basis caulis et foliorum incrassata ut bulbus formata" does not indicate the singular habit of this interesting form.

Luzula multiflora being frequent in our vicinity we have had fresh material at our disposal, and, moreover, we have had the opportunity to study the plant in the various parts of the season. The vernal stage shows the original position of the bulbs, the autumnal their final, morphologic structure. The plant is bulbiferous and the bulbs represent axillary buds, situated in the axils of the basal, membranace-

[1] Buchenau, Fr. Ueber Knollen und Zwiebelbildung bei den Juncaceen. Flora 1891, p. 77.

ous leaves of the aerial, floral and vegetative shoots. Young specimens (Fig. 1) purely vegetative begin with a membranaceous, scale-like leaf preceding the green ones, and a small bulb is always developed in the axil of the first leaf, the membranaceous one. At the base of the shoot a relatively large bulb is very conspicuous, representing the only part left of the preceding year's growth, and the specimen figured was collected in the early spring. When examined at the autumnal stage, such young specimens show two bulbs, since the scale-leaves have withered and become torn by the growth of the bulb; the green leaves persist through the winter, surrounding the terminal bud, which generally develops into a floral shoot in the succeeding year.

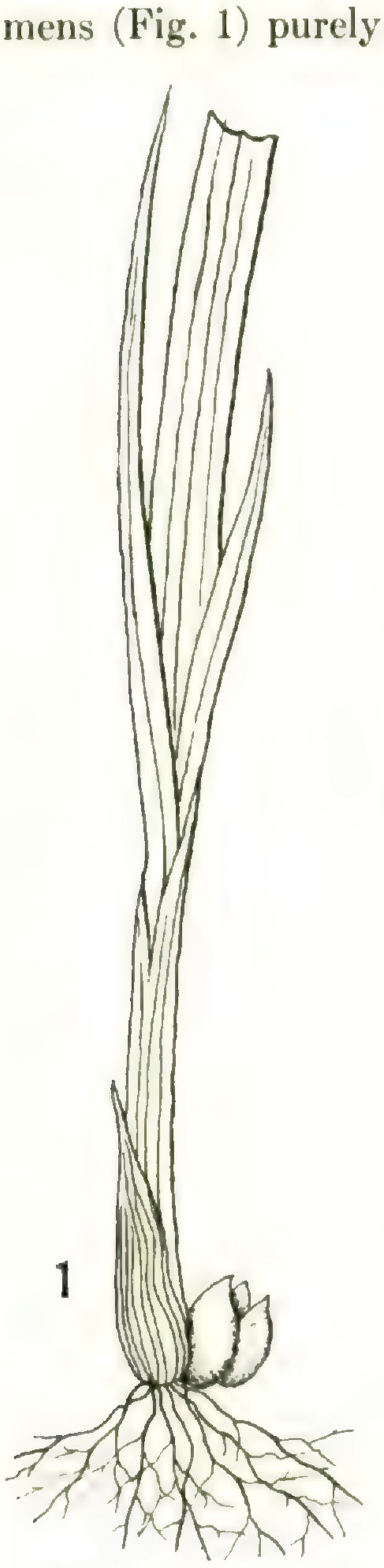
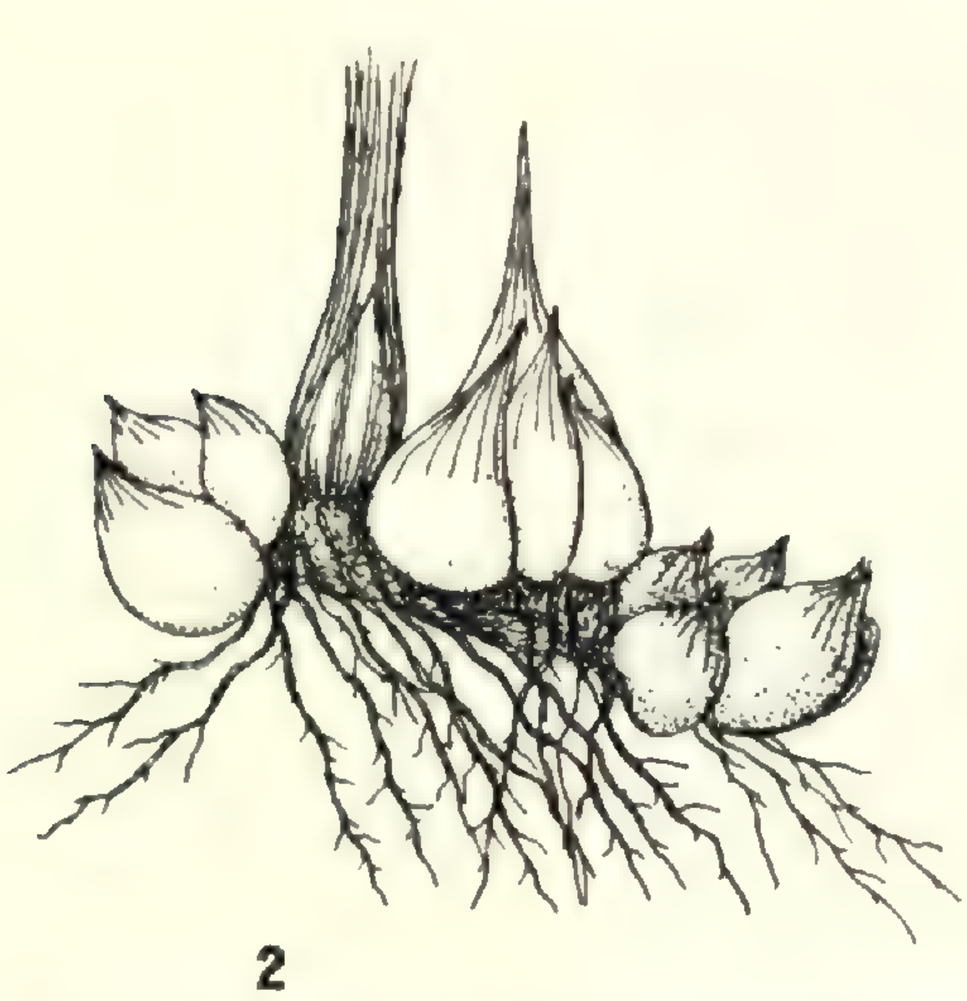


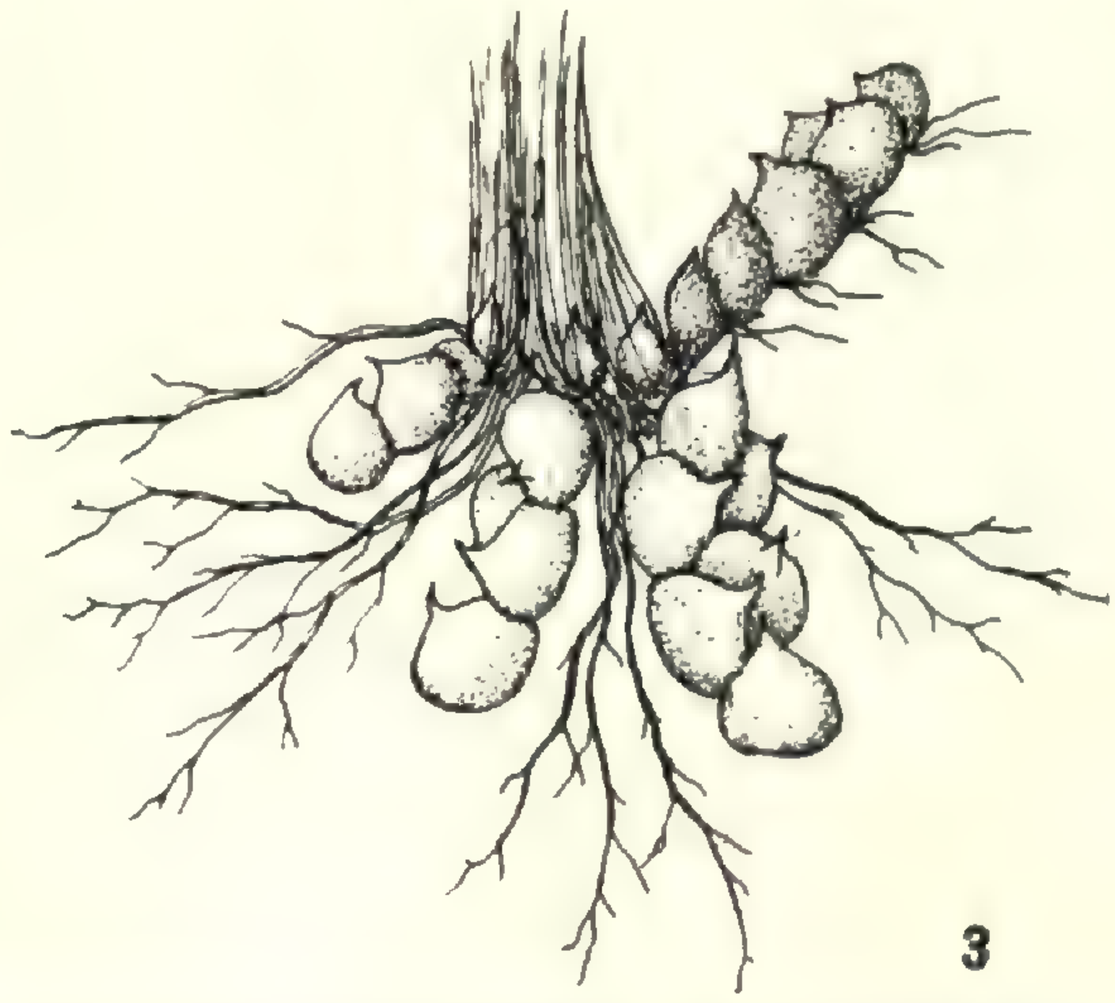
Fig. 1. Young specimen of *Luzula multiflora* Lej. forma *bulbosa*.

The explanation of the position and morphological structure of the bulb is actually given by such young specimens. The plant has dimorphous buds: the apical developing leaves and shoots of the typical structure of *Luzula*, the axillary having succulent scale-leaves and never producing aerial shoots, being simply storage-organs. In mature specimens, densely caespitose, with several floral and many vegetative shoots, the position of the numerous bulbs is very complicated unless the young stage has been studied. Figs. 2 and 3 illustrate the autumnal stage of old plants, and it is readily to be noticed that none of the bulbs have increased in growth beyond a considerable thickening of the bulb-scales; there is no indication of any aerial shoots having been developed from these bulbs, but the original arrangement of the bulb-scales (Fig. 3) has become disturbed by the slow, but continuous growth of the axis, that bears the bulbs, imitating a stoloniferous habit. In figure 2 we have drawn some large bulbs of the typical form during the summer, and some of the bulb-scales show a distinct apex, a rudi-

mentary blade, hairy as the green leaves. The structure of the bulb-scales is somewhat peculiar; they consist of a very thick body with the margins relatively broad hyaline, and composed of the epidermis alone. The chlorenchyma of the scales is very compact, homogeneous, consisting of many strata of isodiametric cells, filled with starch. There are mostly seven very thin mestome-strands in one band; they are of the collateral type and are supported by stereome, thick-walled and especially well represented on the hadrome face,



2



3

Figs. 2 and 3. Bulbs of mature specimens of the same form, collected in the fall. The figures about twice natural size.

while in the green leaves the leptome has the greater, mechanical support. A cross-section of a bulb shows three to five thick scales surrounding a few much smaller and thinner ones, which fail to develop any further. None of the specimens examined showed the base of the floral stem to be bulbous. The subterranean stem is profusely branched, but the internodes are very short; they contain a homogeneous cortex of about five strata with deposits of starch; an endodermis thickened in the manner of a U-endodermis; a band of about 18 mestome-strands, several being of the leptocentric type, and surrounded by thin-walled stereome; the narrow pith is solid, and starch-bearing.

We have thus in this form of *Luzula multiflora* a plant with dimorphous buds, the bulbous being exclusively axillary, performing the function of storage organs, and never producing any aerial shoots, while the typical buds are terminal and produce vegetative and floral shoots.

The bulbiferous form is the most frequent in this vicinity, but we do not believe that the environment plays any rôle of importance, since we have found this form in sandy soil at the border of pine woods as well as in deciduous woods with rich humus.

None of the species of the sections *Pterodes* and *Anthelaca* exhibit this structure; it is confined to *Gymnodes*. In *Luzula nodulosa* (Bory) E. Mey. of the last section the rhizome is moniliform, but tuberous, not bulbiferous; similar tuberous rhizomes are known from several species of *Juncus*, for instance *J. nodosus*, *J. marginatus*, etc., while bulbs or bulb-like formations, known in the inflorescence of various species of *Junci septati* and *graminifolii* are caused by insects, *Livia* for instance.

Clinton, Maryland.

ON SOLIDAGO RIGIDA L., AND THE APPLICATION OF OLD BOTANICAL NAMES.

C. A. Weatherby.

Mr. Mackenzie's recent article on *Solidago rigida*,[1] in which he concludes that that name belongs to the species generally known as *S. patula* Muhl., furnishes a striking illustration of the uncertainties into which we are likely to be led by a strictly historical—one is tempted to say archaeological—method of determining the application of Linnaean and other old botanical names. For the case is by no means so clear to others as it appears to him.

It may be that the description of *Solidago rigida* in the Species Plantarum is not to be regarded as original there, though Linnaeus, in making it up, did revise the quoted diagnosis from the Hortus Cliffortianus to the extent of adding the word "scabris"; nor as based on the specimen in the Linnaean herbarium. But that specimen may have been part of the basis of the undoubtedly original description in the Hortus Cliffortianus; Linnaeus received "all the duplicates of the Clifford herbarium"[2] and for aught Mr. Mackenzie tells us, this may have been one of them. It might have been well to determine this point before altogether rejecting the specimen as representative of the species.

[1] Rhodora xxviii. 29–31 (1926).

[2] See Jackson, Proc. Linn. Soc. cxxiv, suppl. 11 (1912).

In any case, Linnaeus had certainly seen a specimen when he wrote the description in the Hortus Cliffortianus—a specimen "ramis . . . fastigiatis, corymbis terminatricibus." A blind man feeling with his fingers could hardly apply these terms to the strongly racemose inflorescence of *S. patula*, in which the lower branches tend to be remote and spreading and all are almost always floriferous at least to the middle and often nearly to the base. On the other hand, the phrases of Linnaeus apply well to *S. rigida* as currently interpreted, in which the branches tend to be ascending and crowded toward the summit of the stem and are only exceptionally floriferous for as much as half their length, usually bearing corymbiform inflorescences at or near their apices. And a manuscript note of Dr. Gray's states that the specimen of "*Solidago foliis caulinis ovatis*" etc., in the Clifford herbarium is actually *S. rigida* of current manuals.

There can, then, be little or no doubt that *S. rigida*, in its traditional sense, is an element in the *S. rigida* of Linnaeus. Are we, by the historical method, to regard the Clifford specimen as the type, to be associated with the original description of the Hort. Cliff., with which Linnaeus placed as a synonym Herman's "*Virga aurea novae angliae, lato rigidoque folio*" (erroneously, if Herman's plate really represents *S. patula*); or are we, following the principle of the name-bringing synonym, to take Herman's plate (always supposing that it represents *S. patula*) as representative of the species, and the Clifford specimen and description as erroneously associated with it by Linnaeus? In the similar case of *Limodorum tuberosum*,[1] Mr. Mackenzie chooses what corresponds to the former alternative; in this instance, he adopts the latter—without, as it appears to me, arriving at any conclusive results.

Herman's plate[2] is "excellent" in the technique of engraving; but it is not an accurate representation of either of the two species concerned. The lower leaves will do very well for *S. patula;* but the strongly ascending branches, beset with broad-based leaves and bearing terminal corymbs of flowers are quite wrong for that species. It is as if the artist had combined the two. Herman's description is similarly unsatisfactory; much of it seems to apply to *S. patula*, but the statement that the leaves are "as if embracing the stem at base" is at least greatly exaggerated for that species, but accurate enough

[1] Rhodora xxvii. 193–196 (1925).
[2] Parad. Bot. t. 243 (1705).

for many specimens of *S. rigida*, in which the broad, subcordate bases of the leaves do appear amplexicaul. And finally the phrase "tactu aspera" on which Mr. Mackenzie so much relies, applies to either species; the leaves of *S. rigida* are also strongly scabrous, most so beneath.

More might be said, but the above should be enough to show in what an unsatisfied state we are left by the method of determining the application of the Linnaean name followed by Mr. Mackenzie. Yet all the while we have before us two perfectly definite facts—the specimen in the Linnaean herbarium, concerning the identity of which there is no doubt, and the unanimous interpretation of the species by (to go no further) Michaux, Pursh, Eaton, Torrey, Gray, Wood, and Britton.

The verticillate *Eupatoria* present a similar picture. They have been studied by Wiegand[1] and Mackenzie.[2] The two agree perfectly as to the taxonomy of the group, but disagree just as completely as to the application of the three Linnaean names concerned. Repeated rereading of their papers in an effort to arrive at some conclusion satisfactory to me, has convinced me that one argument is, as an argument, precisely as good as the other. Each has its strong and weak points; each is based partly on assumption. We are left with the necessity, if we wish to be certain of being understood, of labelling every specimen in the group with two names, one according to Wiegand and one according to Mackenzie. Yet, here again, there are in the Linnaean herbarium specimens of all three species, which were in his possession when the original portions of his descriptions were written. They could probably be identified by a botanist familiar with the rather technical species involved; so identified and accepted as types, they would at once end the present annoying and hampering ambiguity. Surely, in cases like these, the concrete fact of the Linnaean specimen should be allowed to decide what is otherwise incapable of decision.

It might, indeed, be plausibly argued that, if we were really willing to accept the rule that botanical nomenclature begins in 1753 as meaning what it says, specimens in Linnaeus' possession in that year would a priori become types of his species, regardless of the nomenclatorially invalid pre-Linnaean citations with which he may have

[1] Rhodora xxii. 57–70 (1920).
[2] Op. cit. xxii. 157–165 (1920).

associated them.[1] I am not, however, advocating anything so extreme and so liable to produce its own crop of confusion; as has repeatedly been pointed out,[2] Linnaean specimens are often not types in the modern sense; and, what is more important, it is in the highest degree doubtful if any rule can be devised which will work satisfactorily in all cases or even the majority of them. The circumstances are so various that each is best judged on its own merits. But there are certain considerations which can always and profitably be borne in mind.

In the first place (and this is quite generally forgotten) botanical nomenclature is not in itself primarily a subject for scientific investigation, or a branch of historical research, but a practical device, closely analogous to language. Like language, it has (aside from the work of a few nomenclatorial theorists) assumed its present form through the gradual and more or less spontaneous growth of a body of usage; like language, it is useful just in proportion to the degree in which its component units are employed by everyone in the same sense. The amateur speaks from a sound instinct when he protests against change, even though he has commonly little understanding of the technical difficulties which confront the professional. It is a genuine misfortune when names like *Quercus rubra* and *Solidago rigida*, which for a century and three-quarters have been so consistently and accurately used in a given sense that they have not even accumulated an appreciable synonymy, are shifted from their well-nigh immemorial applications. One could wish that in such cases the principle of the nomen conservandum could be extended to specific names and made to include their application as well as the names themselves.

But this principle would not often have to be invoked if we would bear in mind a second simple consideration—that, if we are ever to achieve stability in the application of old names, we must cling wherever possible, to what is definite and indisputable, and flee from what is merely interpretative, conjectural, and open to argument. The concrete fact may be, as in the above cases, a specimen; it may be a good plate; it may be simply established usage. Very often the best way to arrive at stability is merely to let well enough alone; that

[1] This, of course, would reverse the method—of the name-bringing synonym—generally employed for post-Linnaean literature; but it would make 1753 a real starting-point, not, as is the tendency at present, a more and more insignificant milestone on the road of nomenclatorial history.

[2] See, for instance, Blake, Rhodora xx. 21 (1918).

is, to follow usage unless we can certainly prove it wrong. And by wrong, I do not mean inconsistent with our own individual conceptions of an ideal nomenclatorial system, or with our opinions as to the technical application of existing rules, but demonstrably mistaken.

I am not, of course, arguing against all change; unless we are to become fossilized, change there must be, until our knowledge is perfect. But I am protesting against unnecessary change; and in particular against shifts in typification made on the basis of inconclusive bibliographical investigation, or on any other basis except irrefragable evidence of error.

The above considerations apply with double force to generic names, where a shift may affect, not one only, but many combinations. Here the makers of the International Rules did wisely in leaving the matter of the typification of genera rather vague. They doubtless realized that in many instances it had, for all practical purposes, been already accomplished; in others, it could be hoped that the conclusions of competent monographers would in time win universal acceptance. Is it practicable to go much further?

I look forward with misgiving to the ultimate consequences of the rules for the typification of genera contained in the American Code and in the Type-Basis Code, which it is now proposed to incorporate in the International Rules. Both, at least in their published applications, show the same readiness as does Mr. Mackenzie to pursue the chronologically primary element into the hazy and amorphous distances of pre-Linnaean literature, with the same probability of inconclusive results. Both present so complicated a series of alternatives that there is almost certain to be difference of opinion as to their application in any doubtful case. Both have to deal with the inherent difficulty of imposing the modern notion of types on the work of old authors whose heads it never entered. Both, therefore, may be expected to produce a high percentage of uncertainty and argument—and of these commodities we have enough already.

Probably, stability in generic nomenclature would most surely be approximated by the use of a method like the following.

1. The Species Plantarum should be made a real starting-point. All the genera of Linnaeus should be accepted as there constituted, regardless of the source from which he took their names, or of the sense in which these names were used by the authors from whom he took them. All species in a given genus should be regarded as equally

eligible to serve as the generic type, unless very definitely excluded by collateral circumstances.[1]

2. Where a genus has been later divided, the application of the name should be determined simply by current majority usage, as expressed in standard works. Should these prove hopelessly at variance, some of the provisions of the American Code might be employed as a secondary means of arriving at a conclusion.[2]

In other words, the typification of Linnaean and other old genera should be done, not at the beginning of their history, as is now being attempted, but at the end, after the accumulated results of taxonomic work have been taken into consideration.

Such a method would not be arbitrary, in any proper sense;[3] on the contrary, since it would endeavor to follow the lines of the actual development of nomenclatorial practice, it would be much less arbitrary than the setting up of ex post facto rules. It would be simple and at least apparently practical. It would enable us at once and without further argument, to retain such names as *Pteris* and *Pteridium*, *Holcus* and *Sorghum*, *Aira* and *Deschampsia*, *Sisymbrium* and *Erysimum*, *Leontodon* and *Taraxacum*, and even *Gerardia*, in their traditional senses.[4] And it would support the sound principle

[1] As, for example, certain species of *Acrostichum*, like *A. platyneuron* and *A. polypodioides*, which belong to other Linnaean genera; or, perhaps, species directly designated by Linnaeus as exceptional in their genera.

[2] When once the group to which the generic name is to belong has been thus determined, the choosing of an individual type species, if thought necessary, becomes of little importance and might be accomplished by any practicable means. In many cases, the type would automatically choose itself, through there being but one Linnaean species in the segregate genus.

[3] There is a certain tendency to use this term as a generally derogatory adjective, applicable to any system but one's own.

[4] For shifts in the application of these names see Britton, Flora of Bermuda 419 (1918): Illustrated Flora, ed. 2, ii. 162, 173, iii. 315 (1913): Mackenzie, RHODORA xxvii. 28, 47, 65 (1925); Hitchcock, Am. Journ. Bot. viii. 253, 255 (1921). x. 512 (1923). It may here be remarked that the interpretations of the International Rules given by Hitchcock and Mackenzie appear to me, in the light of the examples cited in these rules, wholly without authority. These authors simply read into the rules their own ideas as to typification. For instance, Art. 45 of the International Rules provides that when a genus is divided, if it contains a section or some other division which, judging by its name or its species, is the type or origin of the group, the name is reserved for that part of it. The single example given is as follows: "the genus *Helianthemum* contained, according to Dunal (in DC. *Prodr.* I. 266–284 [1824]), 112 well-known species distributed in nine sections; several of these sections have since been raised to generic rank (*Fumana* Spach, *Tuberaria* Spach) but the name *Helianthemum* has been kept for the divisions grouped round the section *Euhelianthemum*." It is indeed hard to find in this example, expressly chosen to illustrate the meaning of Art. 45, any justification for Hitchcock's argument that the "historic type" of *Panicum* is *P. italicum* L., and that the name *Panicum* should therefore be applied to *Setaria* under the International Rules (Am. Journ. Bot. viii. 252–253).

that the judgment of our predecessors, on whose work our own is necessarily based, expressed in usage, is not to be summarily thrust out of court, as by the American Code, or given incidental and subordinate consideration, as by the Type-Basis Code, but to carry its due influence.

It has been objected that usage is variable and hard to determine; but this difficulty is, I believe, more apparent than real. The familiar names are not always those that *we* learned;[1] they may be, as in the case of *Solidago rigida*, also those which our botanical fathers, grandfathers, and great-grandfathers learned before us. As to current usage, I have before me five representative European manuals—Bentham & Hooker's British Flora, ed. 7; Bonnier & de Layens's Flore de France; Archangeli's Flora Italiana, 2nd ed.; Schinz & Thellung's Flora der Schweiz, ed. 4; and Garcke's Flora von Deutschland ed. 22. Representatives of eight of the ten genera listed above as the subject of recent shifts under the American and Type-Basis codes appear in all of these floras. There are differences among them as to generic limits; two do not recognize *Deschampsia* and only two take up *Pteridium*. But whenever a genus is recognized at all, it appears under the same name and contains the same nucleus of Linnaean species—is used, that is, in precisely the same sense. The same is true of the American manuals at hand up to the publication of the second edition of the Illustrated Flora in 1913; I have no doubt it would prove true if the genera concerned were followed back at least to the Prodromus and Kunth's Enumeratio. In these cases, and in hundreds of others, usage has become crystallized and definite; what advantage can there be in disturbing achieved definiteness, or in opening the way to disturbing it, merely to satisfy a theoretical and largely untried system?

In 1896, Ascherson & Graebner wrote, in the preface to their Synopsis der mitteleuropäischen Flora, "We hold that nomenclature should be considered, not as an end in itself, but only as a means to the end of the widest possible intelligibility; and that therefore there

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Similarly, his citation of Art. 19 as supporting his typification of *Holcus* overlooks the fact that this article has nothing whatever to do with typification, but was intended simply to legalize the adoption of the genera of the Species Plantarum, which were there published without the description required by the rules. (See Art. 38).

[1] Cf. Hitchcock, Am. Journ. Bot. xiii. 291 (1926).

is no question of principle in regard to it, but only of expediency."[1] These are wise words; they might well be inscribed above the chairman's seat in any assembly where botanical nomenclature is discussed.

East Hartford, Conn.

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND.

M. L. Fernald.

(*Continued from p. 129.*)

Part III. Noteworthy Vascular Plants collected in Newfoundland, 1924 and 1925.

There is no satisfactory list of Newfoundland plants, and the detailed *Flora* which Professor Wiegand and I began in 1910 still needs so many finishing touches that it cannot now be presented. During the past two seasons, however, so many plants have been found which are new to the flora either of Newfoundland or of eastern America that their orderly enumeration at this time is appropriate; and, in order to determine the exact identities of some species, detailed revisions of certain groups have been necessary. In so far as these revisions are completed they are here presented; but certain groups, highly developed in the flora of Newfoundland, still await more critical study and reports upon them must be deferred. These include, among others, the genera *Poa, Polygonum* § *Avicularia, Cochlearia, Euphrasia, Campanula* and *Taraxacum*. In some cases, where new northern or southern limits in Newfoundland have been established, it has seemed appropriate to note species already known from remote sections of the island; and in a few cases new species are described or combinations made for extra-limital plants which have come to my attention in studying those of Newfoundland.

Woodsia alpina (Bolton) S. F. Gray. Dry limestone cliffs, western face of Doctor Hill, and calcareous escarpments, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 27,203, 27,204. See pp. 124, 125. Earlier collections only from Notre Dame Bay.

[1] "Sind wir . . . der Meinung, dass die Nomenclatur stets nur als Mittel zum Zweck der Verständigung in möglichst weiten Kreise, nicht aber als Selbstzweck betrachtet darf, and dass es dabei nur Zweckmassigkeits-, nirgend aber Rechtsfragen gibt."

W. GLABELLA R. Br. Crests of limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 27,205. See p. 124. Not previously known from north of Port-à-Port Bay and Notre Dame Bay.

CYSTOPTERIS BULBIFERA (L.) Bernh. Shaded base of wet escarpments of calcareous sandstone, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 27,206, the first station north of Bay of Islands. See p. 127. At its northernmost station *C. bulbifera* is associated with a peculiarly boreal group of species, including the two preceding and *Poa alpina* L., *Luzula spicata* (L.) DC., *Salix vestita* Pursh, *S. calcicola* Fern. & Wieg., *Draba rupestris* R. Br., *Arabis alpina* L., *Saxifraga cespitosa* L., *S. oppositifolia* L., etc.

C. MONTANA (Lam.) Bernh. Mossy glades in spruce thickets, Savage Cove, *Fernald, Long & Dunbar*, no. 26,153. See p. 75. The only station known in Newfoundland. Found directly across the Straits, at Forteau and Blanc Sablon on the Labrador side.

THELYPTERIS SPINULOSA (O. F. Muell.) Nieuwl., var. **fructuosa** (Gilbert), n. comb. *Nephrodium spinulosum fructuosum* Gilbert, List N. A. Pterid. 37 (1901).

T. spinulosa, var. *fructuosa* stands out rather definitely in the series of variants of *T. spinulosa*. In Newfoundland it is more generally distributed than var. *intermedia* (Muhl.) Nieuwl.

The writer finds the following arrangement of the eastern American varieties of *T. spinulosa* useful and it may be of service to others.

a. Basal inferior and superior pinnules of the lowermost pinnae subopposite, rarely more than 4 mm. apart; the inferior 1–6 cm. long, if more than twice as long as the superior not ecxeeding the 2nd inferior pinnule *b*.

b. Frond glabrous, twice pinnate; the pinnae obliquely ascending, gradually tapering to apex; their pinnules rarely cleft nearly to the middle; the basal inferior one usually longer than the 2nd inferior one: indusia glabrous: scales of the stipe pale-brown or cinnamon-color. . . *T. spinulosa* (typical).

b. Frond commonly minutely glandular especially on the rhachis and rhacheolae, tripinnatifid or sometimes tripinnate; the pinnae slightly ascending to divergent; the basal inferior one shorter than to rarely exceeding the 2nd inferior one: indusia glandular: scales of the stipe usually dark-brown at base *c*.

c. Mature indusia 0.8–1.4 mm. broad: pinnae gradually tapering to apex. . . . . Var. *fructuosa*.

c. Mature indusia 0.5–0.8 mm. broad: pinnae usually narrowed rather abruptly to prolonged lance-linear tips Var. *intermedia* (Muhl.) Nieuwl.

a. Basal inferior and superior pinnules of the lowest pinnae remote, 0.5–2 cm. apart; the inferior 3–10 cm. long, 2–4 times as long as the superior and commonly exceeding the 2nd inferior pinnule *d*.

d. Frond ovate to ovate-triangular, 1–6.5 dm. long, 1–4 dm. broad, tripinnatifid (the basal pinnae simetimes tri-

pinnate), not glandular; the lower pinnules of the lowermost pinnae with oblong obtuse sharply toothed or cleft segments: rhachises of the spreading-ascending pinnae naked or with scattered linear- to lance-attenuate spreading scales: indusia glabrous
Var. *americana* (Fisch.) Weatherby.

d. Frond lanceolate, broad at base, gradually tapering from near the middle to the elongate tip, 2–6 dm. long, 1.2–2.5 dm. broad, tripinnate (the basal pinnae sometimes quadripinnate), somewhat glandular beneath; the ultimate divisions (of the 3rd or 4th order) of the lowermost pinnae elliptic-lanceolate to narrowly rhombic, subpetiolulate to petiolulate: rhachises of the spreading-ascending to falcate-recurving pinnae bearing ovate brown scales as well as bristle-like chaff: indusia glandular.....Var. *concordiana* (Davenp.) Weatherby.

The wholly anomalous var. *concordiana*, it may be noted, has been known only from the original individual. It is very similar to and perhaps identical with the equally anomalous and rare English *Lastrea dilatata*, var. *lepidota* Moore.

In one of Schinz & Thellung's papers, in Vierteljahrss. Natur. Gesells. Zürich, lx. 339 (1915), *Dryopteris austriaca* (Jacq.) H. Woynar is published as a new combination based upon *Polypodium austriacum* Jacq. Obs. Bot. i. 45 (1764). It is frankly admitted, however, that the exact identity of *P. austriacum* is in doubt, for "*P. austriacum* Jacq. wird meistens zu *D. spinulosa* gezogen; nach Woynar soll sie speciell zur Unterart *dilatata* (Hoffm.) C. Christensen gehoren." Jacquin's description is wholly unconvincing and it is difficult to find specimens of the *Thelypteris spinulosa* group which satisfy his requirement of sericeous-woolly bases: "Petioli omnes sunt pilosi, pinnae & stipes inferior minus; sed hic ad basin languine sericea obducitur." The character, *pilose* fronds ("frondibus supra decompositis, pilosis"), is also difficult to reconcile with either *T. spinulosa* or its var. *dilatata*. To displace the long-used and clearly understood names, *Polypodium spinulosum* Muell. (1777) and *P. dilatatum* Hoffm. (1796), by such an indefinite name as *P. austriacum* Jacq. can lead only to confusion or perpetual doubt.

THELYPTERIS FILIX-MAS (L.) Nieuwl. Frequent and abundant on rich slopes and calcareous talus along the Straits of Belle Isle and generally southward near the West Coast. See p. 110.

POLYSTICHUM LONCHITIS (L.) Roth. Exposed or partly shaded limestone ledges or talus, Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,231; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 27, 232; western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 27,235. See p. 102.

Not previously known from north of Bay of Islands and Notre Dame Bay.

ATHYRIUM ALPESTRE (Hoppe) Rylands, var. AMERICANUM Butters. Abundant and very handsome on quartzite rocks and gravels along brooks in gulches of Bard Harbor Hill, Highlands of St. John. See p. 117. This and the upper slopes of Tabletop Mts., Gaspé, are the only known regions for this problematic plant east of the Rocky Mts. On luxuriant clumps the fronds become 9 dm. long and 2.5 dm. wide.

ASPLENIUM VIRIDE Hudson. Exposed or partially shaded limestone along the Straits of Belle Isle, from Big Brook to Burnt Cape, the fronds subcoriaceous and tough, often forming dense turf. See p. 99. Limestone cliffs and ledges, western face of Bard Harbor Hill, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 27,249, *Fernald & Long*, no. 27,253. Not previously known from north of Bay of Islands.

CRYPTOGRAMMA STELLERI (Gmel.) Prantl. Frequent in crevices of calcareous ledges and cliffs, by streams and on escarpments of the Highlands of St. John; not previously known from north of Cow Head. See p. 118.

POLYPODIUM VIRGINIANUM L. Locally abundant on mossy crests and shaded ledges, Highlands of St. John; not previously known from north of Cow Head.

SCHIZAEA PUSILLA Pursh. Wet bog-barrens, Trepassey and Biscay Bay, *Fernald & Long*, nos. 26,156, 26,157, the first stations on the Avalon Peninsula. See p. 84.

OSMUNDA CLAYTONIANA L. Slopes and gulches of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 27,264, 27,265, the first stations on the West Coast north of Bay of Islands. See p. 124.

O. CINNAMOMEA L. Coniferous woods on lower southwestern slope of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,266, the first station on the West Coast north of Chimney Cove.

BOTRYCHIUM LUNARIA (L.) Sw. Common in turf or peat overlying limestone, western Newfoundland, and along the Straits quite to Quirpon. See p. 59. Passing to var. ONONDAGENSE (Underw.) Clute, which is more inclined to occur in shade but which, when occurring in the open, seems to be more sensitive than typical *B. Lunaria*. See p. 119.

B. LANCEOLATUM (S. G. Gmel.) Ångstr. Dryish meadow-slope south of Ship Cove, Sacred Bay, *Fernald, Wiegand & Long*, no. 27,273, the only definite station known to us. See p. 122. Recorded from Newfoundland, without locality, by Underwood, Bull. Torr. Bot. Cl. xxx. 46 (1903).

B. MATRICARIAEFOLIUM A. Br. Dryish meadow south of Ship Cove, *Fernald, Wiegand & Long*, no. 27,276 (see p. 122); very scarce

on turfy slopes and trap talus, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,274, *Fernald & Long*, no. 27,275; very scarce, turfy shore, Flower Cove, *Fernald & Long*, no. 27,277. New to Newfoundland.

EQUISETUM PRATENSE Ehrh. Mossy glades in spruce woods north of Doctor Hill, St. John Bay, *Fernald & Long*, no. 27,284, the first station east of the Gaspé Peninsula. See p. 125.

LYCOPODIUM INUNDATUM L., var. BIGELOVII Tuckerm. Margins of shallow pools in peaty barrens, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,181; wet bog-barrens, Trepassey, *Fernald, Long & Dunbar*, no. 26,182; collected in dried-out pools in tundra, Quarry, *Fernald & Wiegand*, no. 4365. See pp. 56, 84. A coastal plain extreme heretofore not positively identified from northeast of Nova Scotia.

ISOËTES MACROSPORA Dur. Pools and rills among the gneiss hills, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,196; collected in 1910 at Curling by *Fernald & Wiegand* (no. 2404). Recorded by Pfeiffer only from the Avalon Peninsula.

I. TUCKERMANI A. Br. Gravelly margins of ponds, Whitbourne, *Fernald, Long & Dunbar*, nos. 26,197, 26,198; muddy bottom of shallow pool, Cape Dégrat, Quirpon Island, *Fernald & Long*, no. 27,302; also in pond, Frenchman's Cove, Bay of Islands, *Mackenzie & Griscom*, no. 10,031. See pp. 85, 120. Records by Pfeiffer only from Quiddy Viddy Lake.

POTAMOGETON VAGINATUS Turcz. In dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,327; in water over muddy limestone pavement, large pond in barrens south of Flower Cove, *Fernald & Long*, no. 27,328; new to Newfoundland. See p. 127.

P. CONFERVOIDES Reichenb. Shallow pools in peaty barrens among the gneiss hills, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,225. See p. 56. Heretofore known in Newfoundland only from the central and southeastern areas.

P. HILLII Morong. In dead water over muddy limestone pavement, large pond in barrens south of Flower Cove, *Fernald & Long*, no. 27,330, the first from northeast of Vermont. See p. 127. The winter-buds, heretofore scarcely known, were splendidly developed, as large as in *P. obtusifolius* M. & K., but with characteristic bristle-tipped ligules and leaves.

P. FRIESII Rupr. Dead water near tide-limit, East Brook, St Barbe Bay, *Wiegand & Hotchkiss*, no. 27,331, the first in Newfoundland from north of Harry's River. See p. 127.

P. OAKESIANUS Robbins. Pond-hole in boggy spots on hills, western side of Quirpon Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,339, the first from north of Bonne Bay and Notre Dame Bay. See p. 120.

P. PRAELONGUS Wulfen. Deep water of large pond, Cook Point,

Pistolet Bay, *Fernald, Gilbert & Hotchkiss*, no. 27,346, the first from north of the Humber and Notre Dame Bay. Afterward collected on the Labrador side of the Straits (Trout Pond, Blanc Sablon River, *Fernald & Long*, no. 27,347).

Zannichellia palustris L., var. major (Boenn.) Koch. Dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,349, the first on the West Coast from north of Bay St. George. See p. 127.

Glyceria Fernaldii (Hitchc.) St. John. Shallow water of old beaver pond near the Yellow Marsh, back of Bard Harbor, St. John Bay, *Gilbert & Hotchkiss*, no. 27,361, the first from north of Bay of Islands.

G. fluitans (L.) R. Br. Along spring-rill in swale, Trepassey, *Fernald, Long & Dunbar*, no. 26,311, an extension southward from the region of St. John's; also in swales at Bay Bulls. See pp. 83, 85.

Puccinellia coarctata Fern. & Weath. Apparently of general occurrence in northwestern Newfoundland, often occurring in limestone gravel or humus above the direct influence of sea-water. See p. 118.

In 1916 (Rhodora, xviii. 1, 2) Mr. Weatherby and I pointed out that the name *Puccinellia* Parlatore (1848) has precedence as a validly published generic name over *Atropis*. But since European students, to whose judgment we should ordinarily defer, notably Briquet and Schinz and Thellung[1], are maintaining *Atropis* it is perhaps advisable to reiterate the main arguments for and against it. In Ruprecht's *Flores Samojedorum Cisuralensium*[2] several species of *Poa* were enumerated with parenthetical sectional or subgeneric names: "Poa (Phippsia) algida (R. Br.)," "Poa (Catabrosa) airoides Koel.," "Poa (Atropis) distans L.," etc. and at the close of the discussion of "Poa (Dupontia) pelligera" occurred the following: "Observatio necessaria. Arctophila* a Catabrosa (airoide) praesertim differt glumarum conformatione et longitudine, hac nota etiam et insuper valvulis ecostatis a Glyceria R. Br. recedit. Atropis Trin. (P. distans) Catabrosae quoad glumas proxima, spiculas habet (saltem in statu virgineo) lineares, fere teretes; in Arctophila nostra semper ex ovato-oblongae vel lanceolatae. E. conditione glumarum generum series fortasse sequens: Dupontia, Arctophila, Poa, Atropis, Catabrosa, Phippsia, Coleanthus." etc. It has been pointed out that in translating Ruprecht's Latin, Weatherby and I made an error and that the last sentence should begin, "From the condition of the

[1] Schinz & Thell. Vierteljahrss. Naturf. Gesells. Zür. lxviii. 459–461 (1923).
[2] Rupr. Beitr. zur Pflanzenk. des russischen Reiches ii. 61, 64 (1845).

glumes a series of genera perhaps as follows." This, however, does not change our main contention that, since Ruprecht definitely treated all these plants as *Poa* and only by a comment at the end of the treatment half-heartedly tried to call them a series of genera, still using the initial "*P.*" "P. distans" and "P. (Dupontia) psilosantha," the genus *Atropis* (and other genera with it) was not adequately launched. As we have already pointed out, "it is noteworthy that most authors who take up *Atropis* cite not only the Ruprecht reference but the later reference to Grisebach in Ledebour (1853)[1] as validating the genus. Grisebach, in Ledebour, certainly gave a clear generic characterization and treated the species unequivocally as species of *Atropis*, so that *Atropis* as a well published genus should date from Grisebach's treatment in 1853. In 1848, however, Parlatore, with equal clarity and completeness had characterized *Puccinellia* as a genus to include some of the species, *P. distans* and *P. maritima*, later placed by Grisebach under *Atropis;* and it seems to us that the cause of sound nomenclature is best served by maintaining the fully and definitely published *Puccinellia* Parlatore (1848) rather than the inadequately and uncertainly published *Atropis* Trinius in Ruprecht (1845, validated by Grisebach in 1853)." The last point is most important, Shall we gain a sound and stable nomenclature by choosing generic names which are doubtfully or only half-heartedly published instead of those which are put forward with definiteness and presision?

FESTUCA SUPINA Schur. Abundant on calcareous gravel and rock along the Straits of Belle Isle. See p. 102. Previous records from mountains to the south.

F. VIVIPARA (L.) Sm. In peat or turf, rarely on open gravel, abundant in northwestern Newfoundland. See pp. 53, 59.

It is not satisfactory to consider *F. vivipara* merely a viviparous state of *F. supina* or of *F. ovina* L., as is done in Europe. The latter is not indigenous in America, merely an introduction from Europe, but both *F. supina* and *F. vivipara* are indigenous in boreal America. If *F. vivipara* were merely a viviparous state of *F. ovina* or of *F. supina* its occasional non-viviparous panicles should be like those of the latter species. In *F. ovina* and *F. supina*, however, the lemnas are distinctly aristate; but in *F. vivipara* they are muticous. The change from a fertile to a viviparous spikelet should not also alter the lemmas from aristate to muticous.

[1] Griseb. in Ledeb. Fl. Ross. iv. 388 (1853).

F. CAPILLATA Lam. Dry gneiss crests and ridges back of Port aux Basques, *Fernald, Long & Dunbar*, no. 26,319; silicious gravelly slope, Harbour Breton, *Fernald, Long & Dunbar*, no. 26,320. Earlier collections indicate a range across the breadth of southern Newfoundland, where the plant is clearly indigenous. See pp. 50, 56.

POA ALPINA L., var. BIVONAE (Parl.) St. John. Dripping slaty cliffs by waterfall, John Kanes's Ladder, western face of Doctor Hill, *Fernald & Long*, no. 27,400. The only other Newfoundland collection is from Table Mt., Port-à-Port Bay.

P. ALPINA, var. FRIGIDA (Gaud.) Reichenb. Turfy or gravelly limestone shores, tundra or barrens, rather general along the Straits of Belle Isle and south to St. John Bay; also about Port-à-Port Bay and Bay St. George: Boat Harbor, *Fernald, Wiegand & Long*, no. 27,393; Big Brook, *Wiegand, Gilbert & Hotchkiss*, no. 27,390; Sandy (Poverty) Cove, *Pease & Griscom*, no. 27,389; Brig Bay, *Fernald, Long & Dunbar*, no. 26,293; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,396; Table Mt., Port-à-Port Bay, *Fernald & St. John*, no. 10,784, *Mackenzie & Griscom*, no. 10,083; Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,041. The first American records. See pp. 79, 97.

P. ALPINA, var. BREVIFOLIA Gaud. Dry limestone barrens, from Straits of Belle Isle south of St. John Bay: Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,391; Boat Harbor, *Fernald, Wiegand & Long*, no. 27,392; Savage Cove, *Fernald, Pease & Long*, no. 27,394; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no 27,397. The first records from America. See p. 102.

POA LAXA Haenke. Damp quartzite cliffs along upper Deer Pond Brook, Highlands of St. John, *Fernald & Long*, no. 27,405, the first collection from Newfoundland. See p. 124.

CATABROSA AQUATICA (L.) Beauv. Abundant along the Straits and probably the length of the West Coast. Tremendously variable; in rich swales and sloughs with panicles more than 1 dm. long, in drier habitats with them reduced to 2 cm.

HORDEUM BOREALE Scribn. & Sm. Turfy or gravelly slopes, swales, and strands, abundant at the eastern end of the Straits of Belle Isle: Little Quirpon, *Fernald & Gilbert*, no. 27,440; Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,442; Ship Cove, *Fernald, Wiegand & Long*, no. 27,441. See p. 121. Our only previous record was from Port Saunders. A species of the north Pacific slope of America known in the East only from northern Newfoundland and adjacent Labrador.

TRISETUM MELICOIDES (Michx.) Vasey. By brook in boggy thicket southeast of Flower Cove, *Wiegand, Gilbert & Hotchkiss*, no. 27,456, the first Newfoundland station outside the Exploits valley.

DESCHAMPSIA CESPITOSA (L.) Beauv. This polypmorhous circumpolar species is represented in eastern America by four clearly

defined varieties, three of which occur in Newfoundland. Their diagnostic characters are indicated below.

a. Culms 0.65–1.7 m. high, 2–6 mm. in diameter at base: leaves elongate, flat or only tardily involute; the basal mostly 1.5–6 dm. long, with ligules 5–12 mm. long; the lower cauline with blades 1.5–4 dm. long: panicle 1.5–4.5 dm. long, diffuse *b.*
b. Spikelets 3.5–5.5 mm. long.....Var. *genuina.*
b. Spikelets 2–3 mm. long.....Var. *parviflora.*
a. Culms 0.7–7.5 dm. high, 1–2.5 mm. in diameter at base: leaves flat or involute; the basal mostly 0.3–3 dm. long, with ligules 2–7 mm. long; the lower cauline with blades 0.1–1.8 dm. long: panicle 0.2–2.2 dm. long *c.*
c. Spikelets 3–4.5 mm. long: panicle lax, rather diffuse during anthesis.....Var. *glauca.*
c. Spikelets 4.5–7 mm. long: panicle commonly contracted, occasionally diffuse, during anthesis.....Var. *littoralis.*

Var. GENUINA Gren. & Godr. Fl. de France, iii. 507 (1855). *Aira cespitosa* L. Sp. Pl. i. 64. (1753). *A. altissima* Moench, Meth. 182 (1794). *D. cespitosa* (L.) Beauv. Agrost. 91, 160, expl. Pl. xviii. (1812). *A. cespitosa,* ε. *firmula* Wimm. & Grab. Fl. Sil. i. 60 1827). *A. cespitosa genuina* Reichenb. Ic. Fl. Germ. i. t. XCVI. fig. 1682 (1834). *A. cespitosa* b) *altissima* (Moench) Aschers. Fl. Brand. i. 833 (1864).—Newfoundland; Montana to southern British Columbia, south to Colorado, Nevada and California; Eurasia. The following are characteristic. NEWFOUNDLAND: sandy and gravelly banks, Whitbourne, *Fernald & Wiegand,* no. 4599; upper border of gravelly margin of Junction Pond, Whitbourne, *Fernald & Long,* no. 26,282; gravelly thickets along Harry's River, *Fernald & Wiegand,* no. 2589. MONTANA: Bozeman, *Rydberg,* no. 2219; wet meadow, Sheep Creek, *Rydberg,* no. 3301. WYOMING: Laramie, *Merrill,* no. 25. COLORADO: slopes, Mt. Carbon, *Tidestrom,* no. 3725. IDAHO: Forks of St. Mary's River, *Leiberg,* no. 1118; canyon at head of South Fork of the Humboldt, *Heller;* no. 9727. CALIFORNIA: Prattville, *Heller & Kennedy,* no. 8790; Mt. Eddy, *Copeland,* no. 3798. OREGON: wet soil in shade of *Coniferae,* Big Meadows, Des Chutes River, *Leiberg,* no. 523; Camas Prairie, *Griffith & Hunter,* no. 76; ditch, Salem, *Nelson,* no. 1354. BRITISH COLUMBIA: summit of Selkirk Mts., *J. Macoun;* Chilliwack Valley, *J. M. Macoun,* no. 26,084.

Var. PARVIFLORA (Thuill.) Richter, Pl. Eu. i. 56 (1890). *Aira parviflora* Thuill. Fl. Par. ed. 2, i. 38 (1799). ? *A. cespitosa* β. *virescens* Wimm. & Grab. Fl. Sil. i. 60 (1827).—Locally in New England where introduced from Europe. MAINE: damp hollow, woods and thickets along shore, Islesboro, *Woodward, Bissell & Fernald,* no. 8743. MASSACHUSETTS: edge of field, Washington, July 17, 1919, *Hoffmann.* CONNECTICUT: open swamp, very abundant, Franklin, July 8, 1906, *Woodward;* introduced in grassland, Southington, June 21, 1903, *Bissell;* spreading in partly shaded dooryard, South Windsor, *Weatherby,* no. 4945.

Var. GLAUCA (Hartm.) Lindm. fil. Svensk Fanerogamfl. 81 (1918). *Aira ambigua* Michx. Fl. Bor.-Am. i. 61 (1803). *D. glauca* Hartm. Handb. Skand. Fl. 448 (1820). *A. aristulata* Torr. Fl. N. Mid. U. S. i. 132 (1824). *A. cespitosa* β. *glauca* Hartm. l. c. ed. 2: 25 (1832). *A. cespitosa*, var. *minor* Lange, Fl. Dan. xvii. fasc. l. 4, t. MMDCCCC-XLV, fig. 1 (1880).—River-banks, lake-shores and damp, chiefly calcareous, soil, Newfoundland to Yukon, south to northern New Jersey, Pennsylvania, Ohio, Illinois, Arizona, and California; Faroe Islands and Scandinavia. The following, selected from a large series of specimens, are representative. NEWFOUNDLAND: Rock Marsh, Flower Cove, *Fernald, Long & Dunbar*, no. 26,279. QUEBEC: "circa lacus *Mistassins* et juxta amnes in lacum *S. Joannis* defluentes," *Michaux* (type of *Aira ambigua* in herb. Mus. d'Hist. Nat. Paris), "Ab AIRA *cespitosa* foliis tantum differt etiamque dimidio minor est"; Ile-aux-Couleuvres, Lac St-Jean, *Victorin*, no. 15,258; Bonaventure River, August, 1904, *Collins, Fernald & Pease;* St. Lawrence River below Quebec, July 9, 1905, *Churchill.* NEW BRUNSWICK: Woodstock, *Fernald & Long*, no. 12,658; Westfield, *Fassett*, no. 2183. NOVA SCOTIA: Shubenacadie Grand Lake, *Fernald, Bartram & Long*, no. 23,285; Cedar Lake, *Fernald, Bissell, Pease, Long & Linder*, no. 19,946; Yarmouth, *Bissell & Pease*, no. 19,944. MAINE: Fort Fairfield, *Fernald*, no. 183; Milford, *Fernald*, no. 12,655; Winn, *Fernald & Long*, no. 12,657; Pembroke, *Fernald*, no. 1310; West Dresden, *Fassett*, no. 1045. NEW HAMPSHIRE: Lake Umbagog, Errol, *Pease*, no. 10,515; Dalton, *Pease*, no. 17,387; Summer's Falls, June 12, 1897, *Williams.* VERMONT: Lyndon, June, 1871, *Congdon;* Burlington, June 18, 1877, *Pringle;* Brattleboro, July 8, 1895, *Grout.* MASSACHUSETTS: Merrimack R., Lowell, July 20, 1882, *Swan.* CONNECTICUT: Connecticut R., East Haddam, *Weatherby*, no. 4295. NEW YORK: Spencer Lake, Spencer, *Metcalf*, no. 5698; Cortland, *Wiegand*, no. 3526; Bergen, *House*, no. 6521. NEW JERSEY: White Pond, Sussex Co., *Mackenzie*, no. 4648. PENNSYLVANIA: Pleasant Grove, *Heller*, no. 4819. ONTARIO: Belleville, *Macoun*, no. 2239; Wingham, June 17, 1892, *Morton.* MICHIGAN: Isle Royale, *Cooper*, no. 164. WISCONSIN: Jackson Harbor, June 21, 1896, *Schuette.* MINNESOTA: Thompson, Carlton Co., *Sandberg*, no. 395. MANITOBA: Lake Winnipeg Valley, 1857, *Bourgeau.* SASKATCHEWAN: Moose Jaw, *Macoun*, no. 13,080. ALBERTA: Red Deer Valley near Rosedale, *Moodie*, no. 1042; near Banff, July 4, 1891, *Macoun.* MONTANA: Forks of the Madison, *Rydberg & Bessey*, no. 3588. IDAHO: Victor, *Merrill & Wilcox*, no. 185. WYOMING: Laramie River, Albany Co., *Nelson*, no. 430; Washington Ranch, *Merrill & Wilcox*, no. 78. COLORADO: Gunnison, *Baker*, nos. 530, 553; Trout Creek Pass, July 18, 1873, *Coulter;* Hahn's Pass, *Goodding*, no. 1692; Hamor's Lake, *Baker, Earle & Tracy*, no. 982. ARIZONA: Willow Spring, *Rothrock*, no. 230, *Palmer*, no. 566. NEVADA: Jarbridge, *Nelson & Macbride*, no. 2005. CALIFORNIA: Big Trees, Calaveras Co., *Hillebrand*, no. 2246; near

Donner Lake, *Torrey*, no. 558. OREGON: Wallowa Mts., *Cusick*, no. 3126; Lower Albina, Portland, *Sheldon*, no. 11,125. WASHINGTON: Calispel Valley, *Kreager*, no. 328. YUKON: Carcross, *Eastwood*, no. 697e.

The identity of our plant with the Scandinavian var. *glauca* is definitely indicated by beautiful material collected in Torne Lapmark by Professor Alm. This is clearly matched by many American specimens, especially such small plants as *Fernald, Long & Dunbar*, no. 26,279 from Newfoundland; *Fernald & Collins* material from Gaspé Co., Quebec; *Eggleston*, no. 1 from Summer's Falls, New Hampshire; *Sandberg*, no. 395 from Minnesota; *Tweedy*, no. 616 from Yellowstone Park;

Var. LITTORALIS (Reut.) Richter, Pl. Eu. i. 56 (1890). *Aira cespitosa*, var. β. *littoralis* Reuter, Cat. Pl. Vasc. Genève. 116 (1832). *A. littoralis* (Reut.) Godet, Fl. Jura, 803 (1852). *D. cespitosa*, var. *alpina* Vasey in Beal, Grasses N. A. ii. 368 (1896). *D. alpicola* Rydb. Bull. Torr. Bot. Cl. xxxii. 601 (1905). *A. alpicola* Rydb. Fl. Rocky Mts. ed. 2, 1112 (1923).—Southern Labrador, western Newfoundland and eastern Quebec; Alaska to the alpine regions of Colorado, Utah and California; Eurasia. LABRADOR: wet sands and peats, Forteau, *Long*, no. 27,461; brackish shore, Blanc Sablon, *Fernald & Wiegand*, nos. 2583, 2586 (distrib. as var. *Wibeliana* (Sonder) Ledeb.). NEWFOUNDLAND: exsiccated peaty depressions in limestone barrens, Cape Norman, *Wiegand & Long*, no. 27,460; springy swale, Flower Cove, *Fernald, Long & Dunbar*, no. 26,281; serpentine tablelands, Bonne Bay, *Fernald & Wiegand*, no. 2588, *Kimball*, no. 126; serpentine barrens, Blomidan Mts., *Fernald & Wiegand*, no. 2585; river-bank, Coal River, *Waghorne*, no. 16 (as *D. bottnica* Wahlenb.); limestone tableland, Table Mt., Port-à-Port Bay, *Fernald & Wiegand*, no. 2584, *Fernald & St. John*, nos. 10,781–10,783; gravelly beach, St. George's Pond, *Fernald & Wiegand*, no. 2587; lakeside, Grand Lake, *Waghorne*, no. 18. QUEBEC: mossy serpentine barrens, alt. 1000–1100 m., and alpine brooks and pools, Mt. Albert, *Collins & Fernald*, nos. 24, 24a, *Victorin et al*, no. 17,786; Ste. Anne de Beaupré, *Macoun*, no. 69,230. ALBERTA: mountains north of Cavell Creek, *J. M. Macoun*, no. 98,349; south of Wilcox Pass, *Brown*, no. 1394; Lake Louise, *Brown*, no. 549. IDAHO: Soda Springs, *Mulford*, no. 53. WYOMING: many specimens from the mountains, at 2400–3600 m. COLORADO: many specimens from the mountains at 2600–3965 m. UTAH: Dyer Mine, Uintah Mts., *Goodding*, no. 1299. CALIFORNIA: Tuolumne Meadows, *Smiley*, no. 750; Lake of the Woods Meadow, Tahoe, *Smiley*, no. 65. ALASKA: Unalaska, *Harrington;* Attu Island, *J. M. Macoun*, no. 269.

(*To be continued.*)

Suaeda maritima, A Correction.—*Suaeda maritima* (L.) Dumort. was omitted from my list published in Rhodora xxviii. 37, 1926. I found this species on Charles River marsh, back of Stillman Infirmary, Cambridge, on September 22, 1923. The single specimen was fleshy and prostrate with up-carving branches, and Prof. M. L. Fernald pronounced it distorted. On October 23, 1894, I found a cluster of this species near the same spot. The plants were distorted, but not prostrate. Specimens of these plants are in my herbarium. This is the one species in my list affecting saline habitats.—Walter Deane, Cambridge, Massachusetts.

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 28. September, 1926. No. 333.

LICHENS OF THE GASPÉ PENINSULA, QUEBEC.

Carroll W. Dodge.[1]

The first extensive collections of lichens from the Gaspé Peninsula in eastern Quebec were made by John Macoun,[2] who collected at the eastern end of the Peninsula in the vicinity of Gaspé basin and Percé, then followed along the northern coast with a geological expedition as far as Ste. Anne des Monts where he left the main party, ascended the Rivière Ste. Anne des Monts and climbed Mt. Albert by way of Macoun's Ravine. The collections from this trip were mostly sent to Tuckerman and frequently have very little locality data beyond "*Gaspé Coast*" or "*Gaspé 4000 ft.*" Since Macoun does not mention in his autobiography any other ascents besides Mt. Albert, it is assumed that specimens with this altitude are from Mt. Albert. Specimens marked "Gaspé" alone probably came from the eastern end of the peninsula. Following his ascent of Mt. Albert, he returned along the coast to Percé and collected in that vicinity the rest of the summer. Following this, the central portion of the Shickshock Mountains were explored and mapped with considerable detail by J. F. Collins and M. L. Fernald in 1905 and 1906. Some of the lichens of this expedition were forwarded by Collins to L. W. Riddle for determination. Riddle's list[3] includes some species collected at Bic only. These have been omitted from the present list. The remainder, many in small amounts, have been studied by the writer through the courtesy of Collins.

[1] Contributions from the Cryptogamic Labratory, Harvard University, 94.

[2] Macoun, John. Autobiography 205–207. 1922.

[3] Riddle, L. W. Notes on some lichens of the Gaspé Peninsula. Rhodora 11: 100–102. 1909.

In 1907, Macoun visited Gaspé Basin and Percé, largely for the collection of seaweeds. Some lichens were sent to G. K. Merrill for determination and subsequently issued as "Canadian Lichens" but in so far as I can discover, were never reported. In the summer of 1923, the writer was a member of an expedition to the Shickshock Mountains under the leadership of M. L. Fernald. The topography of the Mt. Logan range which was studied on this expedition, has been reported by Collins and Fernald.[4]

Subsequently Mt. Albert was visited by way of the Rivière St. Anne des Monts and the Ruisseau Plaque à Malade and the eastern edge of the Tabletop range by trail from Mont Louis to the telephone line on the north branch of the Rivière Madeleine, thence following the telephone line nearly to the top of Botanists' Dome. From a camp at Lac Perré, exploration of the northeastern portion of the range was made and one day spent in examining the head of the gorge of the northeastern branch of the Rivière Ste. Anne des Monts.

While the main attention of the writer was given to the collection of basidiomycetes of the regions visited, some time was occupied in collecting material of the more conspicuous lichens. Owing to the conditions of travel in the region, practically no attempt was made to secure specimens of saxicolous lichens and most of the epiphloedal forms were secured from the trees cut for fire wood while the writer remained in camp to attend to the plant presses of the expedition.

The *Cladoniaceae* have received more careful attention since a larger amount of material of this group was collected. In no other group has an extensive study been made beyond the usual microscopic examination and comparison with as authentic material as is available in the lichen herbaria at the Farlow Herbarium. Species marked with an asterisk have not been seen by the writer but have been added from Macoun's list[5] for the sake of completeness. A few names have been added which have been taken from a list made by Bruce Fink in a recent study of material in the herbaria of Philadelphia and Washington in connection with his preparation of a lichen flora of North America.

[4] Collins, J. F. and Fernald, M. L. The region of Mount Logan, Gaspé Peninsula. Geog. Rev. **15:** 84–91. 1925.

[5] Macoun, John. Catalogue of Canadian plants. VII. Lichenes and Hepaticae. Geo. Surv. Canada. p. 49–180. 1902.

VERRUCARIACEAE

VERRUCARIA EPIGAEA (Pers.) Ach. Gaspé Coast, *Macoun.*
V. MURALIS Ach. between Mt. Logan and Mt. Pembroke, *Dodge 2845.*
V. MUTABILIS Borrer apud Leighton. Lac Viellard, *Dodge 2669.*

DERMATOCARPACEAE

DERMATOCARPON MINIATUM (L.) Mann, var. COMPLICATUM (Lightf.) Hellb. *Endocarpon miniatum* (L.) Gaertn. Meyer & Schreb., var. *complicatum* (Lightf.) Schaer. R. Ste. Anne des Monts, Macoun.

SPHAEROPHORACEAE

SPHAEROPHORUS FRAGILIS (L.) Pers. Mt. Albert, *Collins 4179;* East fork of the R. Ste. Anne des Monts, *Collins 4365;* Mt. Dunraven, *Dodge 2618,* Tabletop Range.
S. GLOBOSUS (Huds.) Vainio. *S. globiferus* (L.) DC. *S. coralloides* Pers. Mt. Albert, *Macoun.*

ARTHONIACEAE

ARTHONIA PUNCTIFORMIS Ach. Matane, *Dodge 2139.*

GRAPHIDACEAE

GRAPHIS SCRIPTA (L.) Ach. var. LIMITATA (Pers.) Ach. Gaspé county, *Macoun.* Var. RECTA Schaer. R. Ste. Anne des Monts, *Macoun.*
XYLOGRAPHA OPEGRAPHELLA Nyl. Gaspé coast, *Macoun.*
OPEGRAPHA VARIA Pers. between Mont Louis and Lac Mont Louis, *Dodge 2886;* Lac Perré, *Dodge 2887,* Tabletop range.

LECIDEACEAE

LECIDEA (BIATORA) BERENGERIANA (Massal.) Th. Fr. *Biatora Berengeriana* Massal. R. Ste. Anne des Monts, *Macoun.*
L. (BIATORA) GRANULOSA (Ehrh.) Schaer. *Biatora granulosa* (Ehrh.) Poetsch. Gaspé Coast, *Macoun.*
L. (BIATORA) **peliaspis** (Tuck.) Dodge, n. comb. *Biatora peliaspis* Tuck. Proc. Am. Acad. Arts Sci. **12**: 179. 1877. Gaspé Basin, *Macoun 7, 8, 11;* Lac Perré, *Dodge 2183,* Tabletop Range.
L. (BIATORA) VERNALIS (L.) Ach. *Biatora vernalis* (L.) Fr. Gaspé coast, *Macoun 46, 51, 184.* Subsp. MINOR Nyl. ex Norrl. Lac Perré, *Dodge 2183,* Tabletop range.

L. (EULECIDEA) ALBOCAERULESCENS (Wulf.) Ach. var. FLAVOCAERULESCENS Schaer. between Mt. Logan and Mt. Pembroke, *Dodge 2666*, Logan range; R. Ste. Anne des Monts, *Macoun*; Tabletop, *Collins 4408*.

L. (EULECIDEA) ATROBRUNNEA (DC.) Schaer. between Mt. Logan and Mt. Pembroke, *Dodge 2845*.

L. (EULECIDEA) CONTIGUA (Hoffm.) Fr. between Mt. Logan and Mt. Pembroke, *Dodge 2668;* R. Ste. Anne des Monts, *Macoun*.

L. (EULECIDEA) CINERASCENS (With.) A. L. Smith. *L. speirea* Ach. Big Chimney, Mt. Mattaouisse, *Dodge 2871*.

L. (EULECIDEA) PANAEOLA Ach. between Mt. Logan and Mt. Pembroke, *Dodge 2665*.

L. (EULECIDEA) ENCLITICA Nyl. between Lac Mont Louis and north fork of R. Madeleine, *Dodge 2178*.

L. (EULECIDEA) PARASEMA Ach. *Buellia parasema* (Ach.) Th. Fr. Gaspé Coast, *Macoun 186;* Matane *Dodge 2882*. Var. ELAEOCHROMA Ach. var. *enteroleuca* (Ach.) Nyl. *L. enteroleuca* Ach.* Mt. Albert, *Macoun;* Lac Perré, *Dodge 2884*, Tabletop range.

L. (EULECIDEA) MELANCHEIMA Tuck. Lac Perré, *Dodge 2885*, Tabletop range.

MEGALOSPORA SANGUINARIA (L.) Massal. *Heterothecium sanguinarium* (L.) Flot. R. Cap Chat, *Dodge 2879;* gorge, northeast branch of R. Ste. Anne des Monts, *Dodge 2184;* between Mt. Logan and Mt. Pembroke, *Dodge 2186*.

BIATORINA PREMNEA (Fr.) A. L. Smith. *B. grossa* (Nyl.) Mudd. *Heterothecium grossum* (Nyl.) Tuck. *Lecidea grossa* Nyl. Maddalena Bay, *Macoun 4;* R. Madeleine, *Macoun*.

BILIMBIA SABULETORUM (Floerke) Branth & Rostr. *Biatora hypnophila* (Turn.) Tuck. *Lecidea hypnophila* Turn. Gros Rocher, *Dodge 2145, 2645;* Gaspé coast, *Macoun 172;* Gaspé Basin, *Macoun 175*.

B. SPHAEROIDES (Dicks.) Koerb. *Lecidea sphaeroides* (Dicks.) Sommerf. between Mont Louis and Lac Mont Louis, *Dodge 2179*.

*BACIDIA LUTEOLA (Schrad.) Mudd. *B. rubella* (Hoffm.) Massal. Fink list.

B. **leucampyx** (Tuck.) Dodge, n. comb. *Biatora leucampyx* Tuck. Syn. N. Am. Lich. **2**: 47. 1888. Gaspé, *Macoun 13*.

B. INCOMPTA (Borr.) Anzi. between Lac Mont Louis and north fork of R. Madeleine, *Dodge 2881*.

RHIZOCARPON OBSCURATHUM (Schaer.) Massal. east branch of Ruisseau Plaque à Malade, Mt. Albert, *Dodge 2661*.

R. GEOGRAPHICUM (L.) DC. *Lecidea geographica* (L.) Schaer. *Buellia geographica* (L.) Tuck. Le Vieillard au Sud, *Dodge 2667*, Mt. Dunraven, *Dodge 2873*, Tabletop range; between Mt. Logan and Mt. Pembroke, *Dodge 2665*, Logan range.

BUELLIA MYRIOCARPA (DC.) Mudd. Gaspé county, *Macoun*.

CLADONIACEAE

BAEOMYCES PLACOPHYLLUS Ach. between Mt. Mattaouisse and Mt. Collins, *Dodge 2167*;* Gaspé coast below Ste. Anne des Monts, *Macoun*.

*B. RUFUS (Huds.) DC. *B. byssoides* (L.) Schaer. R. Madeleine *Macoun*.

(*To be continued.*)

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND.

M. L. Fernald.

(*Continued from p. 155.*)

DESCHAMPSIA ATROPURPUREA (Wahlenb.) Scheele. Wet quartzite rocks and gravel by brooks, gulches of Bard Harbor Hill, Highlands of St. John, the first stations in Newfoundland: upper Deer Pond Brook, *Fernald, & Long*, no. 27,462; Southwest Gulch, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,463. See p. 116.

AGROSTIS CANINA L. Moss and silicious rocks along rill, slope of South Hill, St. John's *Fernald, Long & Dunbar*, no. 26,257; margin of cold brook in spruce thicket, Bay Bulls, no. 26,258; gravelly margin of Goose Pond, Whitbourne, no. 26,259; dry gneiss crests and ridges and peaty barrens, Port aux Basques, nos. 26,260, 26,262. Older collections indicate that the species is indigenous across the breadth of southern Newfoundland. See pp. 50, 56, 81, 85.

A. PALUDOSA Scribn. Dry gravelly limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,479, the first Newfoundland station. Described from Blanc Sablon, Labrador but represented in the Gray Herbarium from as far west as Quapitagone, Saguenay Co., Quebec (*St. John*, no. 90,123 as *A. borealis*). See p. 118.

A. MELALEUCA Trin. Springy swales and limy bog-barrens near the Rock Marsh, Flower Cove, *Fernald, Long & Dunbar*, nos. 26,253, 26,280, *Fernald, Pease & Long*, no. 27,481, *Fernald*, no. 27,483; dripping quartzite cliffs and ledges, upper Deer Pond Brook, High-

lands of St. John, *Fernald & Long*, no. 27,482; the only stations known in eastern America. See pp. 63, 109.

Calamagrostis Pickeringii Gray. Wet boggy tundra in central valley of Quirpon Island, *Fernald & Long*, no. 27,484, the first from north of Notre Dame Bay and Bonne Bay.

C. Pickeringii, var. debilis (Kearney) Fernald & Wiegand. Boggy barrens ("mesh") south of Ship Cove, *Fernald, Wiegand & Long*, no. 27,485, the first from north of Notre Dame Bay and Bonne Bay.

Ammophila breviligulata Fern. Dunes and sandy beach, Sandy Cove, Ingornachoix Bay, *Fernald, Long & Dunbar*, no. 26,273, the first Newfoundland station north of Bay St. George. See p. 80.

Alopecurus aequalis Sobol. Brookside in bushy swale on flat north of Doctor Hill, St. John Bay, *Fernald, & Wiegand*, no. 27,503; shallow water of old beaver pond near the Yellow Marsh, back of Bard Harbor, St. John Bay, *Gilbert & Hotchkiss*, no. 27,504; the only stations known north of Port-à-Port. See p. 127.

A. aequalis, var. natans (Wahlenb.) Fern., Rhodora, xxvii. 198 (1925). Pools in tundra, Boat Harbor, *Fernald, Wiegand & Long*, no. 27,505. See p. 107. Known outside the arctic and subarctic regions only along the Straits of Belle Isle.

Muhlenbergia racemosa (Michx.) BSP. Boggy meadow bordering pond, Bard Harbor, St. John Bay, *Hotchkiss*, no. 27,509, the first from north of Bay of Islands. See p. 127.

Oryzopsis asperifolia Michx. Knoll in spruce thicket, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,510, the first from north of Bay of Islands.

Milium effusum L. Abundant in glades and gulches of Bard Harbor Hill, Highlands of St. John, the only Newfoundland region known for it except shores of Ingornachoix Bay. See p. 111.

Hierochloe odorata (L.) Wahlenb. Abundant in swales and tundra along the Straits. The previous Newfoundland collections belong to the seashore var. fragrans (Willd.) Richter.

Eriophorum Scheuchzeri Hoppe. Wet swales and margins of ponds, Flower Cove, *Fernald, Long & Dunbar*, no. 26,334, *Fernald Pease & Long*, nos. 27,443, 27,444, the first authentic stations in Newfoundland. See pp. 61, 109.

E. Chamissonis C. A. Meyer., var. aquatile (Norman) Fernald, Rhodora, xxvii. 207 (1925). Shallow pool at base of Cape Dégrat, Quirpon Island, *Fernald & Long*, no. 27,545, the only known American station. See p. 120.

E. opacum (Björnstr.) Fernald. Abundant in limy bog-barrens and tundra along the Straits of Belle Isle. See pp. 53, 62, 98.

E. callitrix Cham. See Fernald, Rhodora, xxvii. 205 (1925). Wet peaty limestone barrens and tundra along the Straits of Belle Isle, the only region known for the species except St. Lawrence Bay on the western side of Bering Straits. See pp. 98, 105.

Rynchospora alba (L.) Vahl. Boggy meadow bordering pond, Bard Harbor, St. John Bay, *Hotchkiss*, no. 27,570, the first from north of Bonne Bay. See p. 127.

Carex capitata L. Peaty margins of pools in limestone barrens back of Big Brook, *Fernald & Long*, no. 27,575; peaty margins of pools in limestone barrens on the Highlands northeast of Big Brook, *Pease & Griscom*, no. 27,576; dryish tundra, Schooner (Brandy) Island, *Pease & Long*, no. 27,577; the first stations in Newfoundland. See pp. 98, 99.

C. incurva Lightf. A characteristic turf-plant on damp limestone along the Straits, eastward to Eddies Cove, southwestward to Deadman's Cove. See. pp. 61, 108.

C. chordorhiza Ehrh., var. sphagnophila Laestad. Springy swales and quaking bogs in the limestone barrens, Flower Cove, *Fernald, Long & Dunbar*, nos. 26,382, 26,383; swales on limestone barrens, Sandy (Poverty) Cove, *Fernald, Long & Gilbert*, no. 27,588; boggy swales, Eddies Cove, *Fernald, Wiegand & Long*, no. 27,587; the first American records for the variety. See p. 108.

C. sterilis Willd. Frequent in peat overlying limestone, north to the Straits. See p. 79.

C. Deweyana Schwein. Peaty borders of spruce thickets near Mistaken Cove, *Fernald & Griscom*, no. 27,601; glades and openings in spruce thickets east of Big Brook, *Fernald, Wiegand & Hotchkiss*, no. 27,602; meadow below limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 27,603; the first authentic collections from Newfoundland. See p. 100.

C. trisperma Dew., var. Billingsii Knight. Wet bog-barrens, Trepassey, *Fernald, Long & Dunbar*, no. 26,376. See p. 84. The only other Newfoundland collection is from the East Branch of the Humber.

C. bipartita All. *C. Lachenalii* Schkuhr. See Mackenzie, Bull. Torr. Bot. Cl. 1. 348 (1923). Brookside on slaty hills east of Little Quirpon, *Fernald & Gilbert*, no. 27,622; wet mossy quartzite rocks along Mans Humbug Brook, Highlands of St. John, *Fernald & Long*, no. 27,617; new to Newfoundland. See pp. 121, 124.

C. glareosa Wahlenb. Turfy slopes of slaty hills, Little Quirpon, *Fernald & Long*, no. 27,618, new to Newfoundland. See p. 121.

C. brunnescens Poir. True *C. brunnescens*, the stiff and low plant with brownish subapproximate ellipsoid spikes is a plant of exposed crests and headlands and southwest of Newfoundland is strictly alpine. The lax plant with remote obovoid greenish spike is var. sphaerostachya (Tuckerm.) Kükenthal. It abounds in thickets and woodlands and extends well to the south in the eastern United States. It may prove to be a good species, *C. sphaerostachya* (Tuckerm.) Dewey. Its essential bibliography is: *C. vitilis* a. spiculis virescentibus Fries, Mant. iii. 137 (1842). *C. canescens*, var. γ. *sphaerostachya* Tuckerm. Enum. Meth. 10, 19 (1843). *C. sphaero-*

stachya (Tuckerm.) Dew. Am. Journ. Sci. xlix. 44, t. Ee, fig. 110 (1845). *C. vitilis* b. *sylvatica* Meinsh. Fl. Ingr. 402 (1878). *C. canescens*, var. *vulgaris* Bailey, Bot. Gaz. xiii. 86 (1888). *C. brunnescens gracilior* Britton in Britt. & Brown, Ill. Fl. i. 351 (1896).

C. RUPESTRIS All. Dominant on limestone, western Newfoundland, south to Bay St. George. See p. 62.

C. NOVAE-ANGLIAE Schwein. Turfy and silicious rocky slope of Joan Plains Hill, Bay Bulls, *Fernald, Long & Dunbar*, no. 26,417, the first from the Avalon Peninsula. See p. 85.

C. UMBELLATA Schkuhr. Barren silicious crests of Joan Plains Hill, Bay Bulls, *Fernald, Long & Dunbar*, no. 26,414; seen but not collected at Trepassey; the first stations on the Avalon Peninsula. See pp. 84, 85.

C. PEDUNCULATA Muhl. Woods and thickets on Bard Harbor Hill, Highlands of St. John and on St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 27,647, 27,648; extensions northward from Bay of Islands.

C. CONCINNA R. Br. Shaded limestone ledges and escarpments, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,649, the only Newfoundland station except Mackenzie & Griscom's on Cape St. George. See pp. 101, 102.

C. GLACIALIS Mackenzie. Dominant on limestone gravel in western Newfoundland from Quirpon to Bay St. George. See pp. 62, 79, 103, 121.

C. EBURNEA Boott. Shaded limestone ledges and escarpments, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,659; mossy coniferous woods, lower southwestern slope of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,660; extensions north from Bay of Islands.

C. BICOLOR All. Wet depressions and margins of rills and pools in the limestone barrens, generally distributed from Pistolet Bay to Ingornachoix Bay, the only known region for the species in America. See pp. 76, 91, 105, 118.

C. LIVIDA (Wahlenb.) Willd. See Fernald, RHODORA, xxviii. 8 (1926). Turfy limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,672, the only known station outside northern Europe and Alberta. See p. 102.

C. LIVIDA, var. RUFINAEFORMIS Fernald, l. c. (1926). Wet muddy hollow in limestone gravel-barren, Four-Mile Cove, *Fernald, Wiegand & Long*, no. 27,637 (TYPE of the var.). See p. 108.

× CAREX **quirponensis**, n. hybr. (*C. atratiformis* × *Halleri*), laxe caespitosa; culmis 2–6 dm. altis rigidulis superne acute angulatis scabrisque basi vaginis aphyllis atropurpureis deinde fibrillosis obtectis; foliis culmo valde brevioribus 2–4 mm. latis laete viridibus;

spicis 2–4 ellipsoideis 0.7–1.3 cm. longis 4–6 mm. crassis, lateralibus breviter pedunculatis subapproximatis vel imo remotiusculis adscendentibus, terminalibus majoribus gynaecandris; squamis late ovatis obtusis vel subacutis atropurpureis margine plus minusve anguste albo-hyalinis; perigyniis vacuis ovatis planis 3 mm. longis dense papillosis enerviis stramineis apice purpurascentibus.—NEWFOUNDLAND: abundant as scattered clumps on the turfy and rocky western slope of Cape Dégrat, Quirpon Island, August 7, 1925, *Fernald & Long*, no. 27,696 (TYPE in Gray Herb.)

Although abundant over a large area on the eastern half of Quirpon Island (See p. 121), *Carex quirponensis* is here described as a hybrid because in all the scores of clumps we examined no good achenes could be found and because it is an exact blend of *C. atratiformis* Britton and *C. Halleri* Gunn. (*C. alpina* Sw.), both of which are dominant and very fertile species from Cape Onion to Cape Bauld and Cape Dégrat. A very similar hybrid of *C. atrata* and *C. Halleri* (× C. *Candriani* Kneucker) is known in Europe.

C. HALLERI Gunn. Dominant in turf or on crests of slate or trap cliffs, eastern end of the Straits Coast: Little Quirpon, *Fernald & Long*, no. 27,697; Quirpon Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,698; Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,701; Cape Onion, *Fernald*, no. 27,700; Anse aux Sauvages, *Fernald, Wiegand & Long*, no. 27,699; new to Newfoundland. See pp. 121, 123.

C. STYLOSA C. A. Meyer. Springy and seepy slopes in peaty barrens among the gneiss hills, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,385 (collected in the same region, and then new to Newfoundland, by *Curtis & Lunt*, in 1912); abundant in damp quartzite gravel or in turf, summit-barrens of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,702, *Wiegand, Gilbert & Hotchkiss*, no. 27,703, *Fernald & Long*, no. 27,704; mossy brooksides and turfy slopes, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,707, *Fernald & Long*, no. 27,708; turfy and rocky slopes of Cape Dégrat, Quirpon Island, *Fernald & Long*, no. 27,705. See pp. 56, 110, 121.

C. RIGIDA Good. Although common on the bare crests of southwestern Newfoundland, *C. rigida* seems to be rare north of Bonne Bay, a single station: turfy and mossy quartzite rocks along Mans Humbug Brook, Highlands of St. John, *Fernald & Long*, no. 27,711. See p. 56.

C. LENTICULARIS Michx., var. ALBI-MONTANA Dewey. Wet quartzite rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,719, new to Newfoundland. See p. 124.

C. SALINA Wahlenb. The small typical form of the species, with short scales is common on saline shores along the Straits.

C. SALINA, var. PSEUDOFILIPENDULA (Blytt) Kükenth. As noted on p. 122, this variety occurs on the Labrador side of the Straits and on the Gaspé coast. A plant from the boggy barren south of Ship Cove (*Fernald, Wiegand & Long*, no. 27,732) is an exact match for Scandinavian material cited by Kükenthal as *C. aquatilis* × *C. salina*, var. *pseudofilipendula*, so that the presence in the region of var. *pseudofilipendula* may be inferred.

C. HOSTIANA DC., var. LAURENTIANA Fern. & Wieg. Glades in spruce swamp, Brig Bay, *Fernald, Long & Dunbar*, no. 26,445, an extension north from Bay of Islands. See p. 79.

C. OEDERI Retz., var. SUBGLOBOSA (Mielich.) Richter. In clay mixed with limestone gravel, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,733. This and material from Pointe Riche (*Fernald & Wiegand*, no. 2912) is all we know from America. See p. 119.

C. LEPIDOCARPA Tausch. Wet calcareous soil on the West Coast, northward to the Straits. See p. 118.

C. MICROGLOCHIN Wahlenb. Dominant on peaty limestone barrens and in wet tundra, from Pistolet Bay to St. John Bay. See pp. 53, 61, 79, 118.

C. VESICARIA L., var. RAEANA (Boott) Fern. Boggy barren ("mesh"), south of Ship Cove, *Fernald, Wiegand & Long*, no. 27,758, the only Newfoundland station yet known except on the lower Humber. See p. 122.

JUNCUS EFFUSUS L., var. PYLAEI (Laharpe) Fern. & Wieg. Bushy swale on flat north of Doctor Hill, St. John Bay, *Fernald & Wiegand*, no. 27,764, the first station north of Bay of Islands. See p. 127.

J. BULBOSUS L. Cold brooks, spring-rills, margins of pools, etc., Trepassey, *Fernald, Long & Dunbar*, nos. 26,482, 26,483, and Bay Bulls, no. 26,484; extensions south from the northern Avalon Peninsula. See pp. 50, 81, 83.

J. ALPINUS Vill., var. UNI-BICEPS Laestad. Wet depressions and borders of pools in limestone barrens and tundra, Cook Point, *Fernald, Gilbert & Hotchkiss*, no. 27,779; Burnt Cape, *Fernald & Long*, no. 27,777; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 27,774, 27,776; the first records from America.

J. ALBESCENS (Lange) Fernald. Dominant on wet calcareous barrens from Quirpon to Bay St. George. See pp. 62, 118.

J. STYGIUS L., var. AMERICANUS Buchenau. Frequent or common southward but rare northward: bare wet peat in depressions in limy bog-barrens, Flower Cove, *Fernald, Long & Dunbar*, no. 26,498; pools in tundra, central valley of Quirpon Island, *Fernald & Long*, no. 27,792; the first stations north of Bonne Bay.

LUZULA SPICATA (L.) DC. Abundant along the Straits from Pistolet Bay eastward; also on the Highlands of St. John. Previously known only locally from the East Coast. See p. 110.

L. CAMPESTRIS (L.) DC., var. COMOSA (Meyer) Fern. & Wieg.

Dry spruce thickets, Curling, *Fernald, Long & Dunbar*, no. 26,499. All previous stations are on the East Coast.

L. CAMPESTRIS, var. CONGESTA (Thuill.) Meyer. Wet spruce thickets among the gneiss hills back of Port aux Basques, *Fernald, Long & Dunbar*, no. 26,500, the first from eastern America. See p. 56.

ALLIUM SCHOENOPRASUM L., var. **laurentianum**, n. var., a var. *sibirico* recedit floribus minoribus (8–10 mm. longis) intense coloratis; segmentis ovatis vel ovato-lanceolatis.—Near the Gulf of St. Lawrence, western Newfoundland, and locally across the continent. NEWFOUNDLAND: along Eddies Cove Brook, July 24, 1925, *Griscom*, no. 27,822; muddy depressions in gravelly limestone barrens one mile back of Savage Cove, July 14, 1925, *Fernald & Long*, no. 27,821; wet places, Flower Cove, July 23, 1921, *M. E. Priest*, no. T5; damp crevices and gravel of limestone, Rock Marsh, Flower Cove, July 30, 1924, *Fernald, Long & Dunbar*, no. 26,512; in clay mixed with limestone gravel, barrens, St. John's Island, July 31, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,824 (TYPE in Gray Herb.); turfy calcareous western slope under summit of Bard Harbor Hill, July 28, 1925, *Wiegand, Gilbert & Hotchkiss*, no. 27,823; dry limestone cliffs and talus, western face of Doctor Hill, August 24, 1925, *Fernald & Long*, no. 27,825; damp talus of limestone sea-cliffs, Pointe Riche, August 4, 1910, *Fernald & Wiegand*, no. 3069. QUEBEC: Restigouche River, Metapedia, July 23, 1904, *A. S. Pease*, no. 4448. NEW BRUNSWICK: in grass field, Casey's Cape, Kent Co., July 9, 1914, *F. T. Hubbard*. NEW YORK: bank of Black River, Watertown, July 3, 1857, *Wm. Boott*. MONTANA: Belton, Glacier National Park, September 17, 1921, *S. D. McKelvy*. OREGON: Wallawalla, *Tolmie*. WASHINGTON: Marcus, August 18, 1902, *Kreager*, no. 459.

In typical var. *sibiricum* (*A. sibiricum* L.) the perianths are 10–14 mm. long, usually with more attenuate segments and commonly paler (though sometimes intensely colored); and in this variety the pedicels are commonly rather elongated so that the well developed flowering umbels are 3.5–5 cm. in diameter. In var. *laurentianum* the short perianths are intensely colored, the segments commonly less attenuate than in var. *sibiricum* and the pedicels mostly short, the well developed flowering umbels being usually 2.3–3 (rarely –3.3) cm. in diameter. Some specimens from eastern Asia (Ochotsk Sea, *Small;* Amur, *Maximowicz*) apparently belong to var. *laurentianum* and in the note on p. 62 they were mistaken for true var. *sibiricum*.

STREPTOPUS OREOPOLUS Fernald, RHODORA, viii. 70 (1906). As noted on pp. 104, 116 and 124, this characteristic plant, heretofore known only from the mountains of Gaspé and Matane Cos., Quebec, occurs about Pistolet Bay and abounds in the gulches of Bard Harbor

Hill. In the latter area it fruits heavily, its berries, previously unknown, being slightly elongate as in *S. amplexifolius* (L.) DC. but of a dark cherry-red color as in *S. roseus* Michx.

IRIS SETOSA Pallas, var. CANADENSIS Foster, forma **pallidiflora**, n. f., floribus albescentibus, sepalis plus minusve caeruleo-tinctis.—NEWFOUNDLAND: turfy shore near Nameless Point, Flower Cove, August 2, 1925, *Fernald & Long*, no. 27,843.

A peculiarly attractive color-form of the usually deep blue-violet northern Iris; the petals and stigmas are white and the large sepals also white except for a faint bluish tinge.

CYPRIPEDIUM PARVIFLORUM Salisb., var. **planipetalum**, n. var., humile, 0.8 2.3 dm. altum; foliis 2 4 ellipticis vel ovatis 3–9 cm. longis 1.7–4.5 cm. latis; sepalis viridibus vel stramineis plus minusve purpureotinctis, superiori ovato 2.2–4 cm. longo 0.8–2.2 cm. lato apice acuto vix acuminato basi rotundato, inferioribus connatis minoribus; petalis stramineis vel purpurascentibus oblongo-lanceolatis planis 2.5–4 cm. longis 0.4–1 cm. latis; labello dorso-ventraliter compresso aureo-flavo 2–4 cm. longo; staminodio basi cordato.—Western NEWFOUNDLAND: turfy limestone barrens, northern half of Burnt Cape, Pistolet Bay, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,855; southern half of Burnt Cape, August 3, 1925, *Fernald & Long*, no. 27,857; peaty slopes of limestone barrens on the Highlands east of Big Brook, Straits of Belle Isle, July 16, 1925, *Fernald, Wiegand & Hotchkiss*, no. 27,854; peaty and bushy areas on limestone barrens one mile back of Savage Cove, Straits of Belle Isle, July 14, 1925, *Fernald & Long*, no. 27,851 (TYPE in Gray Herb.), 27,852 (aberrent individuals); mossy spruce thickets bordering limestone barrens near Ice Point, St. Barbe Bay, July 14, 1925, *Wiegand, Gilbert & Hotchkiss*, no. 27,853; turfy limestone barrens, St. John's Island, St. John Bay, July 31, 1925, *Fernald et al.* no. 27,856; Bay of Islands, July 5, 1906, *C. W. Townsend;* turfy slopes of the marble region between Mt. Musgrave and Humber Mouth, July 18, 1910, *Fernald, Wiegand & Kittredge*, no. 3096; highest summits of the Lewis Hills, July, 1911, *L. S. Sanford;* in humus or turf on the limestone tableland, alt. 200–300 m., Table Mountain, Port-à-Port Bay, July 16 & 17, 1914, *Fernald & St. John*, no. 10,815.

Var. *planipetalum* is distinguished from both *C. parviflorum* and *C. parviflorum*, var. *pubescens* (Willd.) Knight by its short and comparatively broad, flat, usually purplish petals, by the relatively shorter and broader upper sepal with less acuminate or elongate tip and with rounded rather than abruptly narrowed or subcuneate base, and by the cordate staminodium; *C. parviflorum* and its var. *pubescens* having the commonly paler petals linear to linear-lanceolate,

mostly spirally curled and 3.5–9 cm. long, the narrower upper sepal long-acuminate at tip and usually tapering at base, 2.5–5 cm. long in typical *C. parviflorum*, 5–8 cm. in var. *pubescens*. In typical *C. parviflorum* the staminodium is narrowed to subtruncate at base; in the large-flowered var. *pubescens* it is frequently subcordate, in this character approaching var. *planipetalum*. The plant of the Newfoundland barrens is low (mostly 1–2 dm. high) with only 2–4 (usually 3) dilated leaves below the bract; *C. parviflorum* and var. *pubescens* are taller and with 3–5 (usually 4) larger leaves. A battered specimen of Waghorne's from woods at Coal River, Newfoundland is typical *C. parviflorum* and specimens from the Mingan Islands, Anticosti, Gaspé and Alberta strongly approach var. *planipetalum* in having broad and flat petals but the staminodium not cordate as in the Newfoundland plant.

In its broad and flat petals *C. parviflorum*, var. *planipetalum* strongly suggests the Eurasian *C. Calceolus* L. and such a plate as that of Redouté, *Les Liliacées*, i. t. 19 looks almost intermediate between *C. parviflorum* and var. *planipetalum;* and in some European specimens of *C. Calceolus* the staminodium shows a very strong tendency to be cordate at base. In both *C. Calceolus* and *C. parviflorum*, var. *pubescens*, however, the staminodium is longer-stalked than in true *C. parviflorum* and var. *planipetalum* and the sepals and petals of the Eurasian plant are more consistently purple than in the American series. They are very close, however, and it need not be surprising if, with better knowledge of the variations of the two series, the Eurasian and American plants are eventually treated as one polymorphous circumpolar species. See p. 95.

Orchis rotundifolia Pursh. Peaty or turfy depressions in limestone barrens, frequent, often very abundant, from Pistolet Bay westward to Sandy (Poverty) Cove; new to Newfoundland. See. pp. 97, 100, 103.

The Variations of Habenaria viridis.—*Habenaria viridis* (L.) R. Br. is not generally recognized as occurring outside the northern and mountainous regions of Eurasia, its American representives passing very generally as *H. bracteata* (Muhl.) R. Br. or as *H. viridis*, var. *bracteata* (Muhl.) Gray or, by those who treat the sections of Habenaria as genera, as *Coeloglossum bracteatum* (Muhl.) Parl.

The latter plant, with very long and divergent linear-lanceolate bracts is typical of the cooler sections of the Alleghenian and the

warmer sections of the Canadian regions of eastern American—from Newfoundland and Gaspé west to southern Alberta and south in rich woods and meadows to New Jersey, Pennsylvania, Ohio, Illinois and Iowa; and it also occurs in temperate eastern Asia (Japan, China, etc.). The plant of western America, from Alaska south to southern British Columbia, Colorado, the Black Hills and locally to Lake Huron, has the bracts broader, shorter and more ascending than in the common northeastern plant and in the Old World seems to be confined to extreme northeastern Asia. Superficially it resembles the European plant which there passes as *Coeloglossum viride*, var. *bracteatum* Richter, but it is not a good match for the eastern American plant which was first published as *Orchis bracteata* Muhl.[1]

The fact that the plant of western America is not satisfactory *Habenaria bracteata* or *H. viridis*, var. *bracteata* had long been apparent but, like most such questions, its proper working out had been left over until some more convenient moment. Now, however, with the necessity of settling satisfactorily the exact identity of the plant which abounds on the limestone shores and barrens on the south side of the Straits of Belle Isle in northwestern Newfoundland, it has seemed appropriate to review the plants which are passing in different regions as *Habenaria viridis* or *Coeloglossum viride.*

The typical plant of Europe and adjacent Asia, the plant first published as *Satyrium viride* L.,[2] has a comparatively lax raceme with the lowest bracts at most twice as long as the flowers, the middle and upper bracts decidedly shorter, the flowers varying from greenish to red (see for example the plate of *Platanthera viridis* in Reichenbach fil., Icones, xiv. t. 434). Its lip, as shown by about 80 individuals before me and by the European plates, is 3-toothed at apex, as regularly described, the middle tooth, though shorter than the two lateral ones, being well developed. Of somewhat rarer occurrence in Europe is an extreme development, with the bracts more prolonged, the lower 2–3 times as long as the flowers, the upper equaling or exceeding them; but in this long-bracted European plant the lip is like that of typical European *H. viridis* and the bracts are spreading-ascending. It is, apparently, only an extreme variation of the

[1] Muhl. in Willd. Sp. Pl. iv. 34 (1805).
[2] L. Sp. Pl. ii. 944 (1753).

European type and may be the plant which Linnaeus meant as *Satyrium viride, β.*:

"*β.* Orchis palmata batractites. *Bauh. pin. 86. Vaill. paris. 153. t. 31. f. 6, 7, 8.*"[1]

The Vaillant figures, however, show only details of the flowers and nothing of the raceme as a whole, while Bauhin gives no more satisfaction, except to carry the reference back to *Serapias Batrachites vel Myoides* of Lobelius, *Icones Stirpium*, where we find an excellent figure of the short-bracted typical *Habenaria viridis*. The long-bracted plant was perhaps meant by Tenore when he described *Orchis viridis, β. Vaillanti*[2] and Schur clearly described it as *Peristylus viridis* (L.) Lindl., b. *macrobracteata*,[3] from Transylvania, but in general it is treated in Europe as identical with the Alleghenian plant which Muhlenberg sent to Willdenow as *Orchis bracteata*.

In the latter plant not only are the long linear-lanceolate lower bracts strongly, often horizontally, divergent but the middle and upper are much more prolonged than in the long-bracted European plant. Furthermore, the ordinarily narrower (nearly linear) lip is usually only bifid at apex, the 3d or middle tooth which is prolonged in the European plant, usually being nearly or quite obsolete, just as originally described by Muhlenberg through Willdenow: "Labellum *lineare dependens, apice bifidum cum mucrone parvo obscuro inter lacinias, saepius deficiente.*" With its patent and very narrow bracts, its uniformly green or greenish (never highly colored) flowers and its usually narrower lip with the middle tooth ordinarily suppressed *Habenaria bracteata* would constitute a fairly distinct Alleghenian-eastern Asiatic species, were it not for the plant of western America, northeastern Asia and extreme northwestern Newfoundland, a plant with a range which is thoroughly typical and with characters which place it exactly between *H. bracteata* on the one hand and the long-bracted extreme of European *H. viridis* on the other.

The plant of northwestern Newfoundland, originally discovered there by Miss Mary E. Priest in July, 1921, found by Messrs. Long, Dunbar and me in August, 1924, and found in great quantity by our party of 1925, in habit is quite like the long-bracted European plant, *Orchis viridis*, var. *Vaillantii* Ten. or *Peristylus viridis*, var. *macrobracteata* Schur., the smallest specimens closely matching plants from

[1] L. Sp. Pl. ii. 944 (1753).
[2] Ten. Syll. Add. 629 (1831). I have been unable to see Tenore's original account.
[3] Schur, Enum. Pl. Transsilv. 645 (1885).

the Faroe Islands, the taller specimens strikingly like Reichenbach's plate of the long-bracted Bohemian plant; but of the 192 individuals before me while writing, the oblong to narrowly cuneate-oblong lip of all but three or four has the tip consistently with 2 broad and flat teeth and quite without the median tooth of the European plant. In very exceptional individuals the median tooth is developed, just as it is in exceptional individuals of *H. viridis*, var. *bracteata*. The smallest plants of northern Newfoundland are quite identical in all characters with material from northeastern Asia (Arakamtchetchene Island, Bering Straits, *Chas. Wright;* "in monticulo aprico saxoso," Ajan, Ochotsk Sea, *Tiling*); while the larger plants are quite like the plant of western America which has there passed as *H. bracteata*. This plant of western America has the lip almost uniformly 2-toothed at apex, with the median tooth obsolete, but in occasional individuals the 3d tooth is evident.

The whole series seems to form a polymorphous circumpolar species, the American and eastern Asiatic varieties with the lip generally 2-toothed, the European with it more consistently 3-toothed; but with enough departures in the American series to indicate that the plants are not specifically separable.

The conclusions reached in this study are summarized below.

Habenaria viridis (L.) R. Br. in Ait. Hort. Kew. ed 2, v. 192 (1813). *Satyrium viride* L. Sp. Pl. ii. 944 (1753). *Orchis viridis* (L.) Crantz, Stirp. ed. 2: 491 (1769). *Coeloglossum viride* (L.) Hartm. Handb. 329 (1820). *Platanthera viridis* (L.) Lindl. Synop. Brit. Fl. 261 (1829). *Himantoglossum viride* (L.) Reichenb. Fl. Excurs. 119 (1830). *Peristylus viridis* (L.) Lindl. Synop. Brit. Fl. ed. 2: 261 (1835). *Peristylus viridis*, b. *gracillima* Schur, Enum. Pl. Transsilv. 645 (1885). For further synonymy see Richter, Pl. Eu. i. 277 (1890).—Raceme rather lax: lowest bracts equaling to twice as long as the flowers: middle and upper bracts shorter than the flowers: flowers green or yellowish varying to red: lip distinctly 3-toothed at apex; the middle tooth prolonged but shorter than the lateral.—Europe and western Asia.

Var. **Vaillanti** (Ten.), n. comb. *Orchis viridis*, β. *Vaillanti* Ten. Syll. Add. 629 (1831). *H. bracteata* of European authors, not *Orchis bracteata* Muhl. *Platanthera viridis*, var. *bracteata* Reichenb, f. Ic. xiv. 130, t. 435, fig. 1 (1851) not *Orchis bracteata* Muhl. *Coeloglossum bracteatum* Parl. Fl. Ital. iii. 409 (1858) as to plant, not as to name-bringing synonym, *Orchis bracteata* Muhl. *C. viride*, b. *bracteatum* Richter, Pl. Eu. i. 278 (1890) as to plant, not *Orchis bracteata* Muhl. *Peristylus viridis*, b. *macrobracteata* Schur, Enum. Pl. Transsilv. 645 (1885).—Raceme commonly denser, often more elongate: lower

bracts 2–3 times as long as the flowers, spreading-ascending; upper bracts equaling or exceeding the flowers: lip 3-toothed at apex.—Europe and adjacent Asia.

Var. **interjecta**, n. var., 0.5–3.5 dm. alta; foliis 2–5 inferioribus oblongis vel oblongo-obovatis apice rotundatis, superioribus oblongo-lanceolatis acutis; racemo subcapitato deinde longe cylindrico 0.2–1.7 dm. longo; bracteis subadscendentibus, inferioribus lanceolatis vel anguste ovatis floribus dimidio-triplo longioribus, mediis superioribusque floribus brevioribus vel paulo longioribus; floribus viridibus; labio oblongo vel oblongo-cuneato apice bidentato dentibus oblongis vel deltoideis, dento intermedio obsoleto vel rare producto.—Northwestern Newfoundland; Michigan; Alaska to South Dakota, Colorado and southern British Columbia; northeastern Siberia NEWFOUNDLAND: turfy limestone barrens, northern half of Burnt Cape, Pistolet Bay, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,872; turfy limestone barrens, Cook Point, Pistolet Bay, July 18, 1925, *Fernald & Gilbert*, no. 27,873; Cook Point, August 13, 1925, *Fernald, Gilbert & Hotchkiss*, no. 27,876; turfy limestone barrens, Boat Harbor, Straits of Belle Isle, July 19, 1925, *Fernald, Wiegand & Long*, no. 27,874; turfy limestone slope near the sea, Four-mile Cove, Straits of Belle Isle, July 20, 1925, *Fernald, Long & Wiegand*, no. 27,875; gravelly and peaty limestone barrens back of Big Brook, Straits of Belle Isle, July 15, 1925, *Fernald & Long*, no. 27,869; turfy and peaty slopes of limestone escarpment east of Big Brook, July 15, 1925, *Wiegand, Gilbert & Hotchkiss*, no. 27,868; turfy limestone slopes east of Big Brook, July 16, 1925, *Fernald, Wiegand & Hotchkiss*, no. 27,870 (TYPE in Gray Herb.); mossy knolls in tundra back of Big Brook, July 16, 1925, *Pease & Griscom*, no. 27,871; on knolls of *Empetrum nigrum*, *Salix reticulata*, etc., Sandy (or Poverty) Cove, August 1, 1924, *Fernald, Long & Dunbar*, no. 26,532; July 12, 1925, *Fernald & Griscom*, no. 27,865; turfy border of gravelly limestone beach, Savage Point, July 13, 1925, *Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss*, no. 27,867; damp limestone barrens, Yankee Point, July 12, 1925, *Wiegand & Hotchkiss*, no. 27,866; turfy and gravelly limestone strand, Yankee Point, August 16, 1925, *Fernald, Wiegand & Long*, no. 27,877; barrens, Flower Cove, July 15, 1921, *M. E. Priest.* MICHIGAN: Macinac Island, July 12, 1915, *W. H. Manning* (transition to var. *bracteata*). MANITOBA: Lake Winnipeg Valley, 1857, *Bourgeau.* SOUTH DAKOTA: under willows, on slaty soil, edge of Bald Hills, June 5, 1910, *J. Murdock, jr.*, no. 4064. SASKATCHEWAN: Moose Mountain, July 3, 1880, *J. Macoun*, no. 173. ALBERTA: prairie slough, Calgary, June 19, 1903, *M. A. Barber*, no. 192; Banff, July 11, 1891, *Macoun*, no. 2827, July, 1906, *S. Brown*, no. 157. WYOMING: wet woods, Black Hulls, July 25, 1910, *A. Nelson*, no. 9506 (as *Limnorchis borealis*). COLORADO: meadow, vicinity of Long's Peak, Larimer Co., August 21, 1914, *F. W. Hunnewell, 2nd.* BRITISH COLUMBIA: woods near

Emerald Lake, Selkirk Mts., July 4, 1904, *H. Petersen*, no. 75; Cascade Mts., lat. 49°, 1859, *Lyall*. ALASKA: Disenchantment Bay, August 12, 1892, *Funston*, no. 112; Kodiak, July 24, 1904, *Piper*, no. 4438. SIBERIA: Arakamtchetchene Island, Bering Straits, 1853-56, *C. Wright*; "in monticulo aprico saxoso," Ajan, 1851, *Tiling*. See pp. 54, 76, 91, 105.

Var. BRACTEATA (Muhl.) Gray, Man. ed. 5: 500 (1867). *Orchis bracteata* Muhl. in Willd. Sp. iv. 34 (1805). *O. bractealis* Salisb. Paradis. t. 110 (1806-7). *Satyrium bracteatum* (Muhl.) Pers. Syn. ii. 507 (1807). *S. bracteale* Salisb. Trans. Hort. Soc. i. 290 (1812). *H. bracteata* (Muhl.) R. Br. in Ait. Hort. Kew. ed. 2, v. 192 (1813). *Peristylus bracteatus* Lindl. Gen. & Sp. Orch. 298 (1835). *Platanthera bracteata* (Muhl.) Torr. Fl. N. Y. ii. 279 (1843). *Coeloglossum bracteatum* (Muhl.) Parl. Fl. Ital. iii. 409 (1858), as to name-bringing synonym. *Platanthera viridis*, var. *bracteata* (Muhl.) Reichenb. f. Icon. xiv. 130, as to name-bringing synonym.—1.3–4.5 dm. high: raceme lax, 0.3–1.8 dm. long: bracts linear-lanceolate, divergent; the lower and median 2–4 times as long as the green flowers; the uppermost equaling to twice as long as the flowers: lip linear to oblong, 2-toothed at apex, rarely with an intermediate short tooth.—Woods and meadows, Newfoundland to southern Alberta, south to New Jersey, Pennsylvania, Ohio, Illinois and Iowa; Japan, China, etc.

HABENARIA **straminea**, n. sp., *H. albidae* similis; caulibus 1–3.4 dm. altis; foliis inferioribus 2–4 oblongo-obovatis obtusis vel subacutis 2–7 cm. longis 0.8–3.5 cm. latis basi supravaginali cuneatis, superioribus minoribus acuminatis in bracteas decrescentibus, omnibus internodiis subaequalibus; spicis cylindricis plurifloris densis (floribus inferioribus subremotis) 3–10 cm. longis 1.2–2 cm. crassis; bracteis lanceolatis acuminatis ovariis duplo longioribus; ovariis fusiformibus anthesi tortis 4–6 mm. longis; sepalis stramineis anguste ovatis apicem versus plus minusve attenuatis tenuibus valde 3-nervatis 2.7–4 mm. longis; petalis lateralibus anguste ovatis apicem versus angustatis tenuibus valde 3–5-nervatis sepala vix aequantibus; labello submembranaceo 3–5 mm. longo late cuneato trifido lobis lanceolato-deltoideis subaequalibus valde 2–3-nervatis; calcare cylindrico-clavato obtuso 2–3 mm. longo.—Newfoundland, Greenland, Iceland and the Faroe Islands. NEWFOUNDLAND: turfy limestone barrens, northern half of Burnt Cape, Pistolet Bay, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,889; peaty and turfy glades and open slopes, Schooner (or Brandy) Island, Pistolet Bay, July 18, 1925, *Pease & Long*, no. 27,891; moist turfy or peaty depressions in limestone barrens, Cook Point, Pistolet Bay, July 18, 1925, *Fernald & Gilbert*, no. 27,890; boggy depressions in limestone barrens, Cape Norman, July 18, 1925, *Wiegand, Griscom, & Hotchkiss*, no. 27,892 (TYPE in Gray Herb.), August 13, 1925, *Wiegand & Long*, no. 27,895; turfy limestone barrens, Four-Mile Cove, Straits of Belle Isle, July 20, 1925, *Fernald, Wiegand & Long*,

no. 27,893; depressions in tundra one mile back of Savage Cove, Straits of Belle Isle, July 23, 1925, *Fernald, Pease & Long*, no. 27,894. GREENLAND: Julianehaab, 1859, *Rink;* Skansen, Disco, July 8, 1921, *E. A. Porsild;* Disco, 1870, *Berggren;* rich damp soil by brook, Godhavn, August 4, 1878, *Krumlein;* Knanersok, lat. 62°, July 11, 1889, *Hartz; ca.* Neria, lat. 61° 33′, July 8, 1924, *Eugenius.* ICELAND: Reykjahlid, July 25, 1895, *Elizabeth Taylor.* FAROE ISLANDS: Mornafjeld Videro, July 11, 1905, *Elizabeth Taylor.*

The material of *Habenaria straminea* from Greenland, Iceland and the Faroe Islands has regularly passed as *H. albida* (L.) R. Br. From that European species it differs, however, in its thicker spike (in *H. albida* only 0.7–1.3 cm. thick); longer bracts (in *H. albida* rarely much overtopping the ovary); stramineous sepals which are narrower, longer and thinner and with more evident nerves (in *H. albida* the firm white or whitish sepals 2–3 mm. long, with only the midnerve prominent); longer thinner and definitely nerved petals; longer and thinner clearly nerved lip (in *H. albida* the firm and thick yellowish lip about 2 mm. long and opaque to transmitted light); and longer spur.

In *H. straminea,* as found in northwestern Newfoundland, the flowers have a delicious fragrance suggestive of vanilla and Krumlein noted that the Greenland plant has "Fl. pale greenish yellow, sweet scented." Whether the fragrance is different from that of *H. albida* I cannot say. In *H. albida* the short lip is described as horizontal or projected forward. In the herbarium-material of *H. straminea* it is often slightly drooping; whether this character is diagnostic cannot be settled without fresh material. See pp. 102, 105, 106.

HABENARIA OBTUSATA (Pursh) Richardson, var. **collectanea**, n. var., a var. typica recedit racemo 1–4.5 cm. longo floribus approximatis vel subapproximatis; scapo quam folio breviori vel eo paulo superante—Labrador, western Newfoundland, eastern Quebec, northern Manitoba and Alaska. LABRADOR: Indian Harbor, Hamilton Inlet, August 2, 1891, *Bowdoin College Exped.* no. 198; Red Bay, July 4, 1892, *Sornberger*, no. 74; springy banks and damp hillsides, Forteau, July 30, 1910, *Fernald & Wiegand*, no. 3112; gravelly thicket back of strand, Blanc Sablon, August 4, 1910, *Fernald & Wiegand*, no. 3114 NEWFOUNDLAND: mossy brooksides and damp turfy slopes, Sacred Island, Straits of Belle Isle, August 10, 1925, *Fernald & Long*, no. 27,899; mossy and turfy trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, August 11, 1925, *Fernald, Wiegand & Long*, no. 27,900; gravelly and peaty limestone barrens back of Big Brook, July 15, 1925, *Fernald & Long*, nos. 27,897, 27,901; open woods, Flower Cove, July 26, 1921, *Mary E. Priest;* turfy limestone barrens, St. John's

Island, July 31, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,898 (TYPE, in Gray Herb.); damp talus of limestone sea-cliffs, Pointe Riche, August 4, 1910, *Fernald & Wiegand*, no. 3115. QUEBEC: mossy evergreen woods, Goynish, July 5, 1915, *St. John*, no. 90,335; sur les rivages calcaires, Ile à Marteau, Archipel de Mingan, Juillet 15, 1924, *Marie-Victorin & Rolland-Germain*, no. 18,763. MANITOBA: Churchill, lat. 58° 50′, July 26, 1910, *J. M. Macoun*, no. 79,195. ALASKA: Nagai Island, Shumagin Islands, August 1, 1872, *M. W. Harrington*.

In its crowded raceme *H. obtusata*, var. *collectanea* strongly simulates *H. clavellata*, but in all technical characters it is clearly an extreme of *H. obtusata*. In the typical form of the species, a woodland plant, the flowers are remote, forming a loosely alternate-flowered slender raceme which (except in the smallest specimens) is 5–17 cm. long; and the scape usually much exceeds the leaf. See p. 92.

HABENARIA LACERA (Michx.) R. Br., var. TERRAE-NOVAE Fernald. For discussion see RHODORA, xxviii. 21 (1926); also p. 57.

CORALLORHIZA ERICETORUM Drejer. One plant at border of spruce thicket on limestone barren south of Flower Cove, *Pease, Long, & Gilbert*, no. 27,920; two plants in tundra back of Big Brook, *Pease & Griscom*, no. 27,922; one plant in boggy tundra, Schooner (Brandy) Island, *Pease & Long*, no. 27,923; new to America. See p. 93.

MALAXIS **brachypoda** (Gray), n. comb. *Microstylis brachypoda* Gray, Ann. Lyc. Nat. Hist. N. Y. iii. 227 (1835). *Mal. monophyllos* of eastern American authors, not (L.) Sw. *Mic. monophyllos* of eastern American authors not (L.) Lindl.

In his younger days, when he was closely studying plants in the field, Asa Gray clearly understood the distinctions between the plant of eastern North America and *Malaxis monophyllos* (L.) Sw. or *Microstylis monophyllos* (L.) Lindl. of Eurasia; but, overwhelmed apparently by the opinions of Hooker, Lindley, and Torrey, he abandoned his species and, so far as I can find, no one has subsequently suggested that our plant and the Eurasian are not identical. The two are, however, thoroughly distinct; their contrasts are indicated below.

M. MONOPHYLLOS. Flower-bud just before expanding ovate-lanceolate, 2–3 mm. long: pedicel and ovary during anthesis 2.5–4 mm. long: expanded perianth 4–6.5 mm. broad: flower resupinate, the lip and lateral sepals subconnivent and projected forward: capsules 5–7 mm. long, on twisted pedicels 3–5 mm. long, crowned by the subconnivent ascending perianth-segments.

M. BRACHYPODA. Flower-bud just before expanding ovate, 1.5–2 mm. long: pedicel and ovary during anthesis 1.5–3 mm. long: expanded perianth 3–5 mm. broad: perianth-segments (including the lip)

strongly divergent, perpendicular to the axis of the ovary, finally reflexed and appressed to the ovary, the lip drooping: capsules 3–5 mm. long, on straight pedicels 1–2 mm. long, crowned by the reflexed and appressed perianth-segments. See p. 92.

Malaxis diphyllos Cham. Linn. iii. 34 (1829), from Unalaska is the Eurasian *M. monophyllos*. This is indicated by Chamisso's description of it as having "Flores exacte *M. monophylli*, . . . labellum . . . , erectum"; and by the figure of Chamisso's material published by Reichenbach fil. Ic. Fl. Germ. et Helv. xiii & xiv. t. ccccxciii. fig. iii (1851). In *M. brachypoda* the raceme tends to be shorter than in *M. monophyllos*, though the median measurements overlap. In the 16 specimens of the latter before me the inflorescences range from 2–14 cm. in length, with an average length of 7.3 cm. Ten times that number of specimens (161) of *M. brachypoda* show a range from 1–11.5 (av. 4.5) cm.

Calypso bulbosa (L.) Oakes. Mossy spruce woods, very scarce, north of Doctor Hill and on western slope of Bard Harbor Hill, St. John Bay, *Fernald & Long*, nos. 27,930, 27,931; new to Newfoundland. See p. 125.

Salix lucida Muhl. Thickets along East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,932, our only Newfoundland collection from north of the Humber.

S. reticulata L. Dominant and very variable on calcareous barrens and slopes from Quirpon to Ingornachoix Bay; leaves varying from oblong to orbicular and from 0.5–4.5 cm. long. See pp. 53, 59, 62, 79, 118.

S. vestita Pursh. Dominant on calcareous slopes and barrens from Quirpon to Bay St. George. See pp. 75, 79, 117.

S. herbacea L. Mossy shelves of slaty cliffs, upper Deer Pond Brook, Highlands of St. John, *Fernald & Long*, no. 27,954, the first station in Newfoundland. See p. 124.

Salix **jejuna**, n. sp., frutex depressus *S. anglorum* simulans; ramulis repentibus gracilibus glabris olivaceis vel badiis; foliis breviter oblongis vel late ellipticis apice basique subacutis vel rotundatis coriaceis 0.6–2.5 cm. longis 0.2–1.8 cm. latis integris utrinque glabris vel laxe villosis glabratisque reticulatis supra viridibus lucidis subtus glaucescentibus; petiolis 1–5 mm. longis superne sulcatis glabris; stipulis rare evolutis lineari-lanceolatis pilosis 1.5–2.5 mm. longis; gemmis ovoideis obtusis glabris badiis vel stramineis ad 3.5 mm. longis; amentis fructiferis 0.6–1.8 cm. longis 7–9 mm. crassis ramulos foliatos 0.4–2 cm. longos plus minusve pilosos terminantibus; bracteis oblongo-obovatis fuscis vel purpurascentibus sericeo-pilosis vel apice glabratis 1–1.7 mm. longis; capsulis conico-ovoideis obtusis 3–4 mm. longis dense villoso-tomentosis vel glabratis sessilibus vel subses-

silibus; stylo distincto ad 0.3 mm. longo apice bifido stigmata bifida subaequanti; glandula bractea breviore.—Straits of Belle Isle, Labrador and Newfoundland. LABRADOR: Henley Island, Chateau Bay, September 7, 1923, *A. G. Huntsman.* NEWFOUNDLAND: dry rocky and gravelly limestone barrens, Cape Norman, July 18, 1925, *Wiegand, Griscom & Hotchkiss*, no. 27,947, August 13, 1925, *Wiegand & Long*, no. 27,950 (TYPE in Gray Herb.); gravelly limestone barren, Four-Mile Cove, Straits of Belle Isle, July 20, 1925, *Fernald, Wiegand & Long*, no. 27,949; limestone sea-cliffs east of Big Brook, July 16, 1925, *Fernald, Wiegand & Hotchkiss*, no. 27,986. See p. 100.

Salix jejuna is as yet known only in mature fruit. At all the Newfoundland stations it was a very insignificant shrub, forming mats only 0.3–2 dm. across and closely associated with the wholly different *S. calcicola* Fern. & Wieg. In its largest extreme it resembles small shrubs of *S. anglorum* var. *kophophylla* Schneider of the serpentine areas about Bonne Bay and the Bay of Islands, Newfoundland and of Mt. Albert, Quebec; but it is at once distinguished by its tiny fruiting aments, extraordinarily short capsules and short style; *S. anglorum* and its varieties having fruiting aments 3–5 cm. long, capsules 7–8 mm. long and styles comparatively long (toward 1 mm. or even 1.5 mm.). Typical arctic *S. anglorum* reaches its southern limit in Labrador at latitude 55°,—250 miles (400 km.) north of the Straits. Southward *S. anglorum* is represented by three varieties which are confined to serpentine barrens of western Newfoundland and Gaspé; *S. jejuna*, however, in all its Newfoundland stations is on limestone and 180 miles (290 km.) northeast of the nearest known station of *S. anglorum*, var. *kophophylla*.

S. ARCTOPHILA Cockerell. Dominant in damp tundra or on peaty knolls in limestone barrens from Pistolet Bay to St. Barbe Bay, our only other record being from Table Mt., Port-à-Port Bay. See pp. 53, 62, 118.

SALIX ARCTOPHILA Cockerell, forma **lejocarpa** (And.), n. comb. *S. arctica*, γ *groenlandica*, var. *lejocarpa* And. in DC. Prodr. xvi. pt. 2: 287 (1868). *S. groenlandica*, forma *lejocarpa* (And.) Lange, Consp. Fl. Groenl. i. 108 (1880). *S. arctophila*, var. *lejocarpa* (And.) Schneider, Bot. Gaz. lxxvii. 57 (1919).

The plant is surely not a geographic variety but merely a form, colonies of it occurring scattered through the range of the typical form, which has lightly pubescent capsules.

(*To be continued.*)

Technical Name of Sugar Maple.—Mr. Kenneth K. Mackenzie announces in Rhodora (Vol. 28, p. 111, 1926) that *Acer saccharum* Marshall, long used to designate our Sugar Maple, should be abandoned, and, I infer, for *Acer saccharinum* L. In fact he says that "Marshall never published any such species." Nevertheless, Marshall did publish (Arbustum Americanum, p. 4, 1785) *Acer saccharum*, which is a perfectly valid species. It may be said here that Linnaeus never published any such species as *Acer saccharinum*, meaning our Sugar Maple. This proposed upheaval is due to the fact that in translating Marshall's Arbustum Americanum, M. Lœzermes took the liberty of substituting *Acer saccharinum* Linnaeus for Marshall's *Acer saccharum*, thereby only confusing the situation.

Because Lezermes changed Marshall's *Acer saccharum* to *Acer saccharinum* Linnaeus is no reason why the change should be accpted.

As we now understand *Acer saccharum* Marshall it is the oldest valid name applied to the Sugar Maple, while the name *Acer saccharinum* Linnaeus is the oldest valid name applied ot the Silver Maple, which is of course quite different from the Sugar Maple. What possible reason there can be for disturbing either of these names is difficult to see. *Acer saccharinum* Wangenheim was for many years applied to the Sugar Maple, but this name is antedated 34 years by Linnaeus's *Acer saccharinum*, for the Silver Maple, so that Wangenheim's name has no standing except as a synonym of Marshall's *Acer saccharum*.

We have many badly made technical names of trees and other plants, names which from a literary point of view could be much improved by making new ones or by discarding them, as M. Lezermes did and Mr. Mackenzie would seem to approve following in the case of *Acer saccharum* Marshall. Fortunately, however, we do not have the right, nor do we, with the hope of our suggestions being followed, assume to discard or materially change properly published names of plants, even though such names have been badly made. They are legally established and we haven't the right or privilege of discarding them at will.—Geo. B. Sudworth, U. S. Department of Agriculture, Washington, D. C.

Lygodium palmatum and Agrimonia mollis in Berkshire Co., Mass.—Dewey in the list of plants of Berkshire Co., Mass., published in 1829, gave *Lygodium palmatum* from Becket. The species has not since been reported from the county. Mr. C. A. Weatherby, however,

informs me that in August, 1925, he was shown a single plant in Monterey. The station is said originally to have covered a space of about ten by twelve feet and has been known for fifty years. The reduction of the colony to a single plant can be accounted for, Mr. Weatherby thinks, by the growing up of woods around it.

Mr. Weatherby also writes that he found a considerable quantity of *Agrimonia mollis* in woods in the southern part of Lenox. Specimens of each of the above will be deposited in the Gray Herbarium or in that of the New England Botanical Club.—RALPH HOFFMANN, Carpinteria, California.

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THE NEW ENGLAND BOTANICAL CLUB

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TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND.

M. L. Fernald.

(*Continued from p. 178.*)

Salix cordifolia Pursh. *S. cordifolia* is the most variable willow of northwestern Newfoundland, Labrador, the Mingan Islands and the Shickshock Mountains. As already pointed out by Schneider,[1] it includes most of the material which has passed in eastern America as *S. glauca* L.; but so very diverse are the extremes in the American series that it is quite unsatisfactory to treat them, as is done by Schneider, merely as two varieties. For instance, such a shrub as that originally described by Pursh, with broadly ovate cordate-based leaves and densely villous stout branchlets, is not satisfactorily treated as identical with *S. callicarpaea* Trautvetter, well illustrated and clearly described, with elliptic to narrowly ovate leaves rounded to attenuate at base. Nor are these satisfactorily identified with the large shrub occurring along the Straits of Belle Isle, with slender glabrous branchlets and glabrous obovate leaves up to 9 cm. long and 5 cm. broad, nor with another shrub, of depressed habit, with pubescent branchlets and orbicular to short-oblong round-tipped leaves only 0.7–2 cm. broad. Yet it has thus far been impossible to find any characters of the aments which are at all concomitant with the variations of pubescence and foliage; and although the extremes are well marked and practically all material can be sorted definitely into six varieties, there are frequent transitional specimens. It is, however, more satisfactory to have for these stronger tendencies of the species definite varietal names than to force the shrubs into

[1] Schneider, Bot. Gaz. lxvi. 343 (1918).

the two or three categories provided by Schneider.[1] As a tentative classification of the American varieties of *S. cordifolia* the following arrangement is proposed. Owing to almost complete lack of knowledge of the Greenland forms of this group it has been necessary to restrict the study to the shrubs of Labrador, Newfoundland and Quebec; and eventually when the Greenland types are properly studied, some of the varietal names here used may have to be displaced.

a. New branchlets and young leaves more or less densely villous or sericeous *b*,
  b. Leaves of fruiting branches oval to ovate or obovate, cordate to rounded at base, mostly 3–7 cm. long..... Var. *typica.*
  b. Leaves of fruiting branches not cordate, if rounded at base mostly smaller or narrower *c*.
    c. Mature leaves mostly 2.5–6 cm. long, oblanceolate, oblong, elliptic or narrowly obovate.
      Leaves glabrate in maturity or merely a little silky on the nerves beneath.....Var. *callicarpaea.*
      Leaves permanently and rather densely villous....Var. *intonsa.*
    c. Mature leaves mostly only 1–2.5 cm. long, orbicular to short-oblong or narrowly obovate
      Leaves elliptic, oblong or narrowly obovate, acute or acutish.....Var. *Macounii.*
      Leaves orbicular to short-oblong, rounded at summit Var. *eucycla.*
a. New branchlets and young leaves glabrous or essentially so; leaves obovate, 2–5 cm. broad.....Var. *tonsa.*

S. CORDIFOLIA, var. **typica**, n. var. *S. cordifolia* Pursh, Fl. Am. Sept. ii. 611 (1814); Forbes, Salict. Wob. 277, fig. 143 (1829). *S. labradorica* Rydb. Bull. N. Y. Bot. Gard. i. 274 (1899) as to description, not as to later designated type.—Depressed or ascending, up to 0.5 m. high; branchlets rather stout, silky-villous: leaves of the fruiting branches oval to ovate or slightly obovate, cordate, subcordate or rounded at base, acuminate to obtuse; the fully grown 2.5–7 cm. long, 2–4.5 cm. broad, more or less silky-villous on both surfaces, sometimes becoming nearly or quite glabrate; leaves of the sprouts larger, thinner and often more strongly cordate.—The following specimens have been examined. LABRADOR: Henley Harbor, August 15, 1923, *A. G. Huntsman.* NEWFOUNDLAND: dryish limestone talus, western face of Doctor Hill, Highlands of St. John, August 24, 1925, *Fernald & Long*, nos. 27,977, 27,978; dry rocky limestone barrens, near sea-level, Ingornachoix Bay, August 1, 1910, *Fernald & Wiegand*, no. 3219.

Pursh's description of *Salix cordifolia* was very definite:

[1] Schneider treats *S. atra* Rydb. as a form and, although reducing the comparatively distinct *S. callicarpaea* Trautty. and *S. labradorica* Rydberg, proposes *S. cordifolia* forma *hypoprionata* for the individuals of whatever leaf-outline and pubescence which exhibit a slight denticulation on some of the margins.

"S. depressa; foliis ovalibus subacutis basi cordatis integerrimis reticulato-venosis supra glabris, subtus pallidis nervo margineque pilosis, stipulis semicordatis.
In Labrador. ♄. *v. v. s. fl. in Hort. Anderson.* In general habit it resembles *S. myrsinites.*"

Such a description might have been drawn from any of the numbers above cited and it certainly seems right to identify with Pursh's description the shrub which really has oval and cordate leaves. Rydberg, apparently ignoring Pursh's description or laying more emphasis than seems justified upon the permanence of the pubescence, redescribed *S. cordifolia* as a new species, *S. labradorica*, with "young shoots more or less densely villous; leaves broadly ovate, often obtuse or subcordate at the base, rather firm, dark and glossy above, more or less glaucous beneath, on both surfaces invested with white villous hairs." But it is impossible to reconcile with Rydberg's description, "leaves broadly ovate, often obtuse or subcordate at the base," the specimen from Turner's Head, Labrador, which has been designated in the Columbia College Herbarium as the "type" of *S. labradorica;* for this "type" has elliptic-oblanceolate leaves acutish at both ends! Rydberg cites several other specimens (in the Herbarium of the Geological Survey of Canada) and presumably one or more of them agrees with his description of *S. labradorica* and Pursh's description of *S. cordifolia* in having broadly ovate cordate leaves; but if the plant designated as the "type" is to be accepted as standing for *S. labradorica*, then the description is of no account! It is surmised that the "type" was selected without consulting the description further than to pick out the first-cited specimen, which happened to be the one from Turner's Head; and the word "type" was written on the sheet, apparently by Dr. Britton, long after Rydberg had described his species.[1]

Pursh's type specimen is unknown but, as already stated, his description is well matched by actual specimens from Labrador and Newfoundland; and the figure of an oval cordate-based leaf published by Forbes, with a literal translation of Pursh's description is well matched by leaves on Fernald & Wiegand's no. 3219 or on Fernald & Long's no. 27,978. The crenulation of the margin suggested in Forbes's figure is seen on the leaves of the leading shoots of both the

[1] This case raises the question whether the description and the cited plant most nearly matching it are to be taken as of most importance, which seems the logical course; or whether the first-cited specimen, though disagreeing with the description, must be selected in lieu of a definitely cited type.

above numbers. Schneider, almost unfamiliar with true *S. cordifolia* and influenced by the specimen with elliptic or oblong leaves narrowed at base in the Hooker herbarium, was perplexed by Forbes's figure of *S. cordifolia* and was "unable to ascertain its identity."[1]

The commonest variety of *S. cordifolia* is the shrub with the leaves of the fertile branches most commonly elliptic or oblong, but varying to oblanceolate or to narrowly obovate, and narrowed or only slightly rounded at base, acute to obtuse at apex. It was a specimen of this common shrub, also cultivated in the Anderson garden, which led Hooker to remark of *S. cordifolia* Pursh: "The plant thus named for me by Mr. Borrer, who is probably acquainted with the original plant cultivated by Mr. Anderson, little deserves the appellation of *cordifolia*, its leaves being more frequently acute than retuse at the base."[2] But in view of Pursh's description and of the actual occurrence of a shrub with cordate-based ovate leaves the later specimen in Hooker's herbarium (of which a tracing is before me) cannot be taken as in any way typical of true *S. cordifolia*. This narrower-leaved shrub was well described and illustrated as *S. callicarpaea* Trautv. It should be called

S. CORDIFOLIA, var. **callicarpaea** (Trautv.), n. comb. *S. callicarpaea* Trautv. Nouv. Mém. Soc. Imp. Nat. Mosc. ii. 295, t. 7 (1832). *S. cordifolia* Trautv. l. c. 298, t. 9 (1832); Hook. Fl. Bor.-Am. ii. 152 (1839), in part; Schneider, l. c. (1918) for the most part. *S. planifolia* Hook. l. c. 150 (1839) as to Brenton plant. *S. glauca* Rydb. Bull. N. Y. Bot. Gard. i. 271 (1899) as to Labrador plant. *S. Waghornei* Rydb. l. c. (1899) in part. *S. atra* Rydb. l. c. 272 (1899).—Depressed or ascending, up to 1.7 m. high; branchlets silky-villous: leaves of the fruiting branches elliptic or oblong, varying to oblanceolate or narrowly obovate, acute to obtuse at base and apex, 2.5–6 cm. long, 1–3.5 cm broad, silky-villous when young, becoming glabrate or nearly so in age or with merely a slight silkiness on the veins beneath. The typical form of the variety (*S. callicarpaea* Trautv.) has elliptic to narrowly ovate acute leaves. *S. cordifolia*, forma *atra* (Rydb.) Schneider, Bot. Gaz. lxvi. 346 (1918) is the form with narrowly oblong to oblanceolate leaves very acute at both ends The form with obovate obtuse leaves may prove to be *S. obovata* Pursh, l. c. (1814), Forbes l. c. 278, fig. 144 (1829). The individuals which display any serrulate-denticulate margins (frequent on vigorous shoots) have been designated *S. cordifolia*, forma *hypoprionata* Schneider, l. c. (1918). None of these forms seem worth maintaining. Var. *callicarpaea* is common from northern Labrador

[1] Schneider, Bot. Gaz. lxvi. 343 (1918).
[2] Hook, Fl. Bor.-Am. ii. 152 (1839).

to northwestern Newfoundland and the Shickshock Mts., Quebec. The following belong here. LABRADOR: 20 miles north of Nakvak, *H. S. Forbes*, no. 95; Flint Island, near Port Manvers, *O. Bryant*, no. 94; 15 miles west of Nain, *H. S. Forbes*, no. 96; Indian Harbor, *Bryant*, nos. 97, 98; Gready Island, *Bryant*, nos. 90, 92, 93; Battle Harbor, *Waghorne*, no. 21 (cited by Rydberg as *S. labradorica*); Chateau Bay, *Bowdoin College Exped.* no. 78; Red Bay, *Bowdoin College Exped.*, no. 291, *Sornborger*, no. 7; Forteau, *Fernald & Wiegand*, nos. 3209, 3211, 3212, 3220, *Long*, no. 28,029; Blanc Sablon, *Fernald & Wiegand*, nos. 3223, 3225, 3226 (type of *S. cordifolia* forma *hypoprionata* Schneider), *Griscom*, no. 1. NEWFOUNDLAND: Quirpon Island, *Fernald & Long*, nos. 27,974, 28,002; Sacred Island, *Fernald & Long*, no. 28,003; Four-Mile Cove, *Fernald, Wiegand & Long*, no. 27,969; Big Brook, *Fernald & Long*, nos. 27,966, 27,996; Flower Cove, *Fernald, Long & Dunbar*, no. 26,569, *Fernald, Griscom & Gilbert*, no. 27,981; Bear Cove, *Wiegand & Pease*, no. 27,999; St. Barbe, *Fernald, Long & Dunbar*, no. 26,574; Brig Bay, *Fernald, Long & Dunbar*, no. 26,573; Bard Harbor, *Fernald & Long*, no. 28,000; Bard Harbor Hill, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,970; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,001; Pointe Riche, *Fernald & Wiegand*, nos. 3202, 3205; Ingornachoix Bay, *Fernald & Wiegand*, nos. 3206, 3208, 3215–3217, 3222; Cape St. George, *Mackenzie & Griscom*, no. 11,043. QUEBEC: Brest, *St. John*, no. 90,845; Caribou Island, *Martin*, no. 4 (cited by Rydberg as *S. glauca*); Archipel Ouapitagone, *St. John*, no. 90,842; Archipel de Mingan, *St. John*, nos. 90,835–90,840, 90,846, *Victorin & Rolland*, nos. 18,910, 18,911, 18,913, 18,916, 18,922–18,927, 18,929–18,931; Baie Sainte-Claire, Anticosti, *Victorin*, nos. 4349–4351; Table-top Mountains, *Fernald & Collins*, nos. 212, 521; Mt. Albert, *Fernald & Collins*, no. 63; Mt. Pembroke, *Griscom & Pease*, no. 25,680a, *Fernald & Smith*, no. 25,685; Pease Basin, between Mts. Logan and Pembroke, *Fernald, Griscom & Mackenzie*, nos. 25,673, 25,674, *Pease & Smith*, nos. 25,677–25,680; pass between Mts. Logan and Fortin, *Fernald & Pease*, no. 25,008.

Var. **intonsa**, n. var., frutex depressus vel erectus ad 1.7 m. altus; ramulis villosis; foliis maturis lanceolatis vel oblanceolatis vel ellipticis vel anguste ovatis basi apiceque acutis vel obtusis dense villosis 2–4.5 cm. longis.—LABRADOR: 20 miles north of Nakvak, August 28, 1908, *H. S. Forbes*, no. 100; Makkovik, August, 1896, *A. Stecker*, no. 3; Turner's Head, Hamilton Inlet, August 6, 1892, *Waghorne*, no. 36 (the first-cited specimen of *S. labradorica* Rydb. and selected by Dr. Britton as the "type", although in its very narrow leaves acute at base contradicting Rydberg's description,—see discussion under var. *typica*); wet moss along spring-brooks on calcareous sandstone escarpment, Blanc Sablon, September 4, 1925, *Fernald & Long*, no. 28,031. NEWFOUNDLAND: spruce thickets at base of Yankee Point, July 12, 1925, *Fernald & Griscom*, no. 28,025; rocky meadows and

brook-bottoms, upper Deer Pond Brook, Highlands of St. John, August 20, 1925, *Fernald & Long*, no. 28,030 (TYPE in Gray Herb.). QUEBEC: dry granite rock-slides at 950–1200 m. altitude, southern slope of Mt. McNab, Tabletop Mts., August 1, 1923, *Fernald, Dodge & Smith*, no. 25,681.

As already noted, the Turner's Head specimen which Britton has designated as the "type" of *Salix labradorica* Rydb. belongs with *S. cordifolia*, var. *intonsa*. In its pubescence alone does it match Rydberg's description and since both his key and his description emphasize the *broadly ovate* leaves of *S. labradorica*, it seems wholly unsafe to take up for a variety of *S. cordifolia* the misbegotten name *S. labradorica*. Similarly, I am quite unable to separate *S. cordifolia*, var. *intonsa* from some specimens from Greenland which Schneider places in his species, *S. anamesa*. But one has only to read the original discussion of *S. anamesa* Schneider, Bot. Gaz. lxvi. 348 (1918) to see that it is scarcely separable from *S. cordifolia* "from which it chiefly differs by the presence of stomata in the upper leaf surface." Schneider looks upon *S. Waghornei* Rydb. as a hybrid of *S. cordifolia* and *S. anglorum*, because it resembles the former but has stomata in the upper surface of the leaves (as in *S. anglorum*). This interpretation may be correct but not all shrubs of *S. cordifolia* with villous leaves and stomata in the upper leaf-surface can be regarded as hybrids of *S. anglorum*. For instance, *Fernald & Long's* no. 28,031 from Blanc Sablon, Labrador has such stomata, yet Schneider correctly states that the southern limit of *S. anglorum* in Labrador is in latitude 55°—fully 250 miles north of Blanc Sablon. That the presence of stomata is a *specific* character separating the Greenland shrub from the American, I am quite unwillung to admit; and Schneider's memoranda on the Greenland sheets in the Gray Herbarium are specially significant: "cf. S. anamesa Schn."; "S. anglorum Cham. f. satis sericeo-pilosa vel S. anamesae forma"; "f. incerta, prob. ad S. anamesam referenda"; "ab S. anglorum typica certe distinguere non possum (an S. anamesam accedens)"; "S. anamesa Schn. videtur"; "f. mihi incerta, prob. ad S. anamesam Schn. referenda"; "S. anamesa m."; "forma incerta. S. cordifolia v. atra vel S. anamesa Schn. videtur." Until its own author can recognize *S. anamesa* its claims to specific rank are not likely to appeal to others.

Var. MACOUNII (Rydb.) Schneider, Bot. Gaz. lxvi. 347 (1918). *S. Macounii* Rydb. Bull. N. Y. Bot. Gard. i. 269 (1899). *S. Rydbergii* Heller, Cat. N. Am. Pl. ed. 2: 4 (1900). S. *vacciniformis* Rydb.

in Britt. Man. Fl. N. St. and Can. 319 (1901).—Depressed or low shrub: branchlets villous: mature leaves elliptic, oblong or narrowly obovate, acute or acutish, mostly 1–2.5 cm. long, 0.5–1.5 cm. broad, villous or glabrate,—The following are characteristic. LABRADOR: Hopedale, *Sornborger*, no. 1. NEWFOUNDLAND: Quirpon Harbor, *Huntsman;* Schooner (or Brandy) Island, Pistolet Bay, *Pease & Long*, no. 27,997; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 27,987, 27,988; Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 27,998; Big Brook, Straits of Belle Isle, *Pease & Griscom*, no. 27,985; *Wiegand, Gilbert & Hotchkiss*, nos. 27,994, 27,995; Sandy (or Poverty) Cove, *Fernald, Long & Dunbar*, no. 26,575; Savage Cove, *Fernald & Griscom*, no. 27,992; Yankee Point, *Wiegand & Hotchkiss*, no. 27,984; Flower Cove, *Mary E. Priest*, no. C1, *Fernald, Long & Dunbar*, no. 26,571, *Fernald, Griscom & Gilbert*, no. 27,980; Ice Point, *Wiegand, Gilbert & Hotchkiss*, no. 27,993; Brig Bay, *Fernald, Long & Dunbar*, nos. 26,572, 26,578; Ingornachoix Bay, *Fernald & Wiegand*, nos. 3203, 3207, 3218, 3221; Bonne Bay, *Fernald & Wiegand*, nos. 3229, 3230, *Kimball*, nos. 136, 137; Baccalieu Island, Notre Dame Bay, *Sornborger*. QUEBEC: Caribou Island, *Martin*, no. 2; Ile à la Vache Marine, Mingan, *Victorin & Germain*, nos. 18,915, 18,932; Ellis Bay, Anticosti, *John Macoun*, no. 18,830 (TYPE); Fernald Pass, between Mts. Mattaouisse and Fortin, *Fernald, Griscom, Mackenzie, Pease & Smith*, no. 25,670; Pease Basin, between Mts. Logan and Pembroke, *Fernald, Griscom & Mackenzie*, nos. 25,671, 25,672, 25,675.

Var. **eucycla**, n. var., var. *Macounii* similis, foliis orbicularibus vel breviter oblongis apice rotundatis 0.7–2 mm. latis.—NEWFOUNDLAND: turfy limestone barrens, Captain Point, Flower Cove, July 27, 1924, *Fernald, Long & Dunbar*, no. 26,570; limy barrens southeast and south of Flower Cove, July 10, 1925, *Wiegand, Pease, Long & Hotchkiss*, nos. 27,982, 27,991; limestone barrens near sea-level, Pointe Riche, August 4, 1910, *Fernald & Wiegand*, no. 3204 (TYPE in Gray Herb.). QUEBEC: sprawling on ledge, Ile Metchiatik, Archipel Ouapitagone, July 15, 1915, *St. John*, no. 90,841.

Var. **tonsa**, n. var., frutex depressus vel erectus ad 1 m. altus; ramulis glabris lucidis gracilibus; foliis obovatis 2.5–9 cm. longis 2–5 cm. latis glabris submembranaceis.—LABRADOR: wet land, Red Bay, August 7, 1894, *Waghorne*, no. 33 (Arnold Aboretum); springy banks and damp places, Forteau, July 30, 1910, *Fernald & Wiegand*, nos. 3213, 3214. NEWFOUNDLAND: rich thickets on lower slopes of Ha-Ha Mountain, July 17, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 27,967, 27,968; shelves, crests and talus of diorite cliffs, Ha-Ha Mountain, August 5, 1925, *Fernald & Long*, nos. 27,971 (TYPE in Gray Herb.), 27,972; wet slaty cliffs, John Kanes's Ladder, western face of Doctor Hill, August 24, 1925, *Fernald & Long*, no. 27,979. QUEBEC: schistose talus and wet shelves at base (alt. 400–600 m.) of Big Chimney, Mt. Mattaouisse, July 10, 1923, *Dodge, Griscom & Pease*, no. 25,659.

The Waghorne number from Red Bay was cited by Rydberg under *S. Waghornei* Rydb. Bull. N. Y. Bot. Gard. i. 271 (1899), but it is quite different from the type, a poor fragment, scarcely identifiable, collected by Dr. Bryant in 1860. Rydberg's description calls for a shrub with the leaves "somewhat hairy when young, but the long white hairs . . . appressed and parallel to the midrib" and the type-specimen is too near *S. cordifolia* var. *callicarpaea*.

Salix **pedunculata**, n. sp., frutex 0.5–1.5 m. altus erectus; ramulis novellis glabris fuscis deinde castaneis nitidulis; gemmis bene evolutis nondum visis; foliis immaturis membranaceis glabris ellipticis oblongis vel anguste obovatis 2–5.5 cm. longis 1–3 cm. latis subacuminatis vel plus minusve acutis, basi angustatis petiolatis petiolis 3–8 mm. longis margine subintegris vel undulato-crenatis supra viridibus sublucidisque subtus glaucis; stipulis lanceolatis 2–3 mm. longis glanduloso-dentatis deciduis; amentis foemineis coetaneis pedunculatis sub anthesi nondum visis adultioribus 4–8 cm. longis 1.1–1.4 cm. crassis densifloris; pedunculis 1–2.5 cm. longis foliis 2–3 caducis munitis pedunculo rhachique griseo-pilosis; bracteis anguste ovato-oblongis subacutis nigrescentibus 3.5–4.5 mm. longis longe pilosis; capsulis lanceolato-ovoideis longe rostratis 6–8 mm. longis breviter griseo-pilosis pilis nitidulis; stylis distinctis 1.2–1.5 mm. longis supra subclavatis stigmatibus oblongis bifidis adscendentibus stylo duplo brevioribus basi vix distinctis; pedicellis 1.5–2 mm. longis glandulam elongatam duplo superantibus.—Newfoundland: brooksides and pond-margins one mile back of Savage Cove, Straits of Belle Isle, July 14, 1925, *Fernald & Long*, no. 28,035. See p. 95.

In some characters *Salix pedunculata* suggests *S. discolor* Muhl., *S. planifolia* Pursh and *S. arctophila* Cockerell. As an erect coarse shrub with subentire to undulate glabrous leaves glaucous beneath it suggests the two former and its very long fruiting aments are suggestive of those of *S. discolor*. It is at once distinguished from both *S. discolor* and *S. planifolia* by its late flowering, the aments terminating definite and elongate leafy-bracted peduncles. The bracts (or scales) of the aments are more elongate and acute than in *S. discolor*, the style longer, and the stigmas shorter than in that species, and the capsules are shorter than in well-developed *S. discolor*. Besides by its long-peduncled instead of sessile aments *S. pedunculata* differs from *S. planifolia* in its very long fruiting aments, the longest mature aments of *S. planifolia* rarely exceeding 4 cm.; its longer pedicels and capsules and the much shorter pubescence of the latter.

In its large peduncled fruiting aments, its black scales and its

glabrous foliage, herbarium-specimens of *S. pedunculata* superficially suggest *S. arctophila,* but the latter species belongs in a very different section, with prostrate and repent habit, sessile or only short-pediceled capsules, short round-tipped bracts, etc.

The only other near relatives of *S. pedunculata* besides *S. discolor* and *S. planifolia* are *S. phylicifolia* L. of Europe, with which *S. planifolia* was formerly confused, and *S. pennata* Ball, of Washington and Oregon. From the former it is distinguished by its long peduncles and much larger fruiting aments, its longer bracts (or scales) its less deeply cleft stigmas and its longer style; from the latter, as described and illustrated by Ball, by its peduncled aments much longer in fruit, long pedicels and griseous instead of white pubescence of the capsule.

At the type-station *S. pedunculata* formed an extensive thicket at the border of a pond in the limestone barrens back of Savage Cove. It was observed only at this station but further exploration of the little known barrens along the Straits of Belle Isle will doubtless show that it, like most other species endemic in the region, extends over a considerable area.

Salix **amoena**, n. sp., frutex 1–2 m. altus erectus; ramulis novellis glabris vel sparse pilosis glabratisque deinde castaneis nitidulis; foliis immaturis membranaceis glabris ellipticis vel anguste obovatis 4–7 cm. longis 1.3–3 cm. latis apice subacutis vel obtusis basi angustatis petiolatis, petiolis gracilibus ad 1.5 cm. longis, margine undulatis vel remote adpresso-crenatis supra viridibus subtus glaucescentibus; amentis foemineis coetaneis pedunculatis 3–7 cm. longis 1.2–1.7 cm. crassis densifloris vel basi laxifloris; pedunculis 1–3.5 cm. longis foliis 3–4 munitis pedunculo rhachique sericeo-pilosis; bracteis oblongis flavidis 2–3 mm. longis longe pilosis; capsulis lanceolato-subulatis longe rostratis 6–8 mm. longis breviter griseo-pilosis pilis nitidulis; stylis distinctis 1 mm. longis stigmatibus oblongis bifidis subadscendentibus stylo brevioribus; pedicellis 1–1.5 mm. longis glandulam elongatam paulo superantibus.—Newfoundland: rich thickets on lower slopes of Ha-Ha Mountain, Ha-Ha Bay, July 17, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 38,036 (type in Gray Herb.).

In habit *Salix amoena* is very similar to *S. pedunculata* (described in this paper) but it is at once distinguished by the shorter yellow bracts of the aments, the more slender capsule, shorter style, shorter pedicels and relatively longer glands. It also simulates *S. Bebbiana,* var. *perrostrata* (Rydb.) Schneider but is quickly distinguished by the short pedicels and definite slender styles. From all forms of the protean *S. cordifolia* Pursh it stands out by its long, and in maturity,

flexuous or drooping aments, its distinctly undulate or crenate leaves (as in *S. discolor* and *S. Bebbiana*) and its slender pedicels.

In a springy meadow at the northern base of Ha-Ha Mountain it formed a thicket of considerable extent but staminate shrubs, if they there occur, were too far advanced for us to secure good male aments.

S. MYRTILLIFOLIA Anderss. Cold mossy brooksides and pond-margins one mile back of Savage Cove, *Fernald & Long*, no. 28,004; swale by Mile Brook, west of Big Brook, *Long & Gilbert*, no. 28,005; the only Newfoundland records from north of Ingornachoix Bay. See p. 95.

S. MYRYILLIFOLIA var. BRACHYPODA Fernald. Mossy brooksides and damp turfy slopes, Sacred Island, *Fernald & Long*, no. 28,006; meadow below limestone escarpment, western face of Bard Harbor Hill and dryish limestone talus, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, nos. 28,006, 28,010; the first stations except on Table Mt., Port-à-Port Bay. See p. 122. This may prove to be the problematical *S. latiuscula* Anderss. See p. 126.

S. CALCICOLA Fern. & Wieg. Dominant on wet or dry limestone barrens from Pistolet Bay to Ingornachoix Bay. See p. 62. Very variable, the mature foliage varying from elliptic-lanceolate to sub-orbicular and from 0.8–5.6 cm. long.

S. CRYPTODONTA Fern. Cold brooksides and pond-margins one mile back of Savage Cove, *Fernald & Long*, no. 28,026; cold springy glade, interior of southern half of Burnt Cape, *Fernald & Long*, no. 28,028; the first stations except the original, on the East Branch of the Humber. See pp. 95, 119.

S. BEBBIANA Sargent, var. PERROSTRATA (Rydb.) Schneider. Thickets, brooksides and damp calcareous slopes along the Straits, local: Big Brook, *Fernald, Wiegand & Hotchkiss*, no. 28,032; Eddies Cove Brook, Griscom, no. 28,038; Savage Cove, *Fernald & Long*, no. 28,033; the Rocky Mt. extreme, new to Newfoundland. See p. 95.

S. PLANIFOLIA Pursh. Schneider[1] excludes this species from the flora of Newfoundland. It abounds in northwestern Newfoundland from Quirpon to St. John Bay.

S. PELLITA Anderss. Brookside below John Kanes's Ladder, western face of Doctor Hill and meadow below calcareous sandstone escarpments, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 28,057, 28,058; the only Newfoundland records from north of the Humber.

BETULA PUMILA L., var. **renifolia**, n. var., frutex depressus; ramulis villosis; foliis ramulorum fructiferorum plerumque reniformibus vel oblatis basi cordatis margine grosse dentatis.— QUEBEC: gneiss

[1] Journ. Arn. Arb. iii. 89 (1921).

ledges, Mutton Bay, Saguenay County, September 7, 1925, *Fernald & Long*, no. 28,089 (TYPE in Gray Herb.); Bonne Espérance, August 27, 1882, *J. A. Allen*, no. 70 (in part).

In typical *Betula pumila*, which abounds in Newfoundland, southern Labrador and much of eastern Canada, the principal leaves of the fertile branches are obovate and narrowed to the base. At Mutton Bay, var. *renifolia* was a dominant shrub, covering the ledges over a considerable area. No typical *B. pumila* was observed there, although our visit was brief—during the short stop of the steamer.

URTICA GRACILIS AND SOME RELATED NORTH AMERICAN SPECIES.—There are three indigenous Nettles in the region from New England to Newfoundland and Labrador. One of them has regularly passed as *Urtica gracilis* Ait., another as *U. Lyallii* Wats., and the third has been doubtfully referred sometimes to one, sometimes to the other of those species. In attempting to clear the identity of the third plant it has become obvious that we have always misidentified *U. gracilis* and that the wide-ranging boreal species (extending from Newfoundland to British Columbia, south to northern and western New England, northern New York, New Mexico and Oregon) which we have called *U. Lyallii* is not satisfactorily identifiable with the Lyall plant which Watson had before him. And not merely the type of *U. Lyallii* Wats. has been misunderstood, but the identity of his other species, *U. Breweri* of California, has been wholly misinterpreted. There are few good diagnostic characters to be found in the flowers and fruits of our perennial nettles, all of which were treated by Weddell[1] as varieties of the Old World *U. dioica* L. *U. dioica* is, as its name implies, dioecious; the native American plants strongly tend to be monoecious. In the latter series wholly pistillate individuals frequently occur but in the whole range of native American plants studied I have found no specimens which have only staminate inflorescences; various mixtures occur but all American plants apparently have some of the terminal racemes pistillate. On this account and since the American plants have clearly defined and wholly characteristic and consistent ranges, I am treating them as species, although it is not possible to assign them diagnostic fruit-characters. A large proportion of specimens are so poorly collected (for obvious reasons) that the best diagnostic character, the mature stipule, is

[1] Weddell, Mon. Urt. 78 (1856) and in DC. Prodr. xvi.[1] 50–53 (1869).

not well displayed. The texture and shape of the mature stipules, a character already used by Rydberg in his *Flora of the Rocky Mountains*, is probably as important a character as any. In the eastern and transcontinental plants the stipules are scarious to herbaceous in texture and green to at most pale-brown; in the three species confined to the Pacific slope, *U. holosericea* Nutt., *U. Breweri* Wats. (? *U. californica* Greene) and *U. Lyallii* Wats., they are subcoriaceous to coriaceous and soon become deep-brown to castaneous. As a result of the present study the following memoranda on the principal perennial species of temperate North America are recorded.

URTICA GRACILIS Ait. Hort. Kew. iii. 341 (1789). As usually interpreted, *U. gracilis* is the tall species of the eastern United States with the stems only slightly, if at all bristly, except at base, but cinereous-pilose above; the primary leaves ordinarily oblong-lanceolate or narrowly ovate-lanceolate, with 20–35 teeth on each margin—those subtending the lowest inflorescences with 19–38 (av. 25); the petiole $\frac{1}{5}$–$\frac{3}{5}$ as long as the blade; the lower leaf-surfaces ashy-puberulent and the stipules densely cinereous-puberulent. This plant is of wide range in the United States, westward across the Mississippi Basin; and, so far as shown in the Gray Herbarium, its northeastern limit extends from the warm southern side of the Gulf of St. Lawrence (Nova Scotia and Prince Edward Island—lat. 46°–47°) across southern Aroostook County, Maine (lat. 46° 40′) to the region slightly north of Montreal (lat. 46° 20′) and the counties of Ontario bordering Lake Ontario (lat. 44°).

When Aiton's original description is studied some points are apparent which at once indicate that we have been in error in applying to the plant just defined the name *U. gracilis.* Aiton's description was brief but clear:

"6. U. foliis oppositis ovato-lanceolatis nudiusculis, caule petiolisque hispidis, racemis geminis.
Slender-stalk'd Nettle.
Nat. of Hudson's Bay.
Introd. 1782, by the Hudson's Bay Company."

The description alone might be given little weight, were it not for the type region, Hudson Bay, hundreds of miles to the north of the known northern limit of the tall species with puberulent closely toothed leaves and cinereous stipules. But in view of the occurrence in northwestern Newfoundland and on the Labrador Peninsula, thence westward to British Columbia, and south to the Magdalen

Islands, northern and western New England, northern New York, New Mexico and Oregon, of a plant with ovate-lanceolate usually glabrous slender-petioled leaves with the upper half of the stem and the petioles often bristly, it seems clear that it is this more northern species which should bear the name *U. gracilis*. The more boreal plant has the stems glabrous or merely setulose above; the leaves lanceolate to ovate, glabrous or only sparingly pilose beneath; their margins more coarsely toothed than in the more southern species—each side of the leaves subtending the lowest inflorescences having 13–23 (av. 17) teeth; the petiole slender and elongate, 1.5–5.5 (av. 3) cm. long, $\frac{1}{5}$–$\frac{3}{5}$ as long as the blade; and the very thin stipules often nearly glabrous. This is the plant which in eastern America has passed as *U. Lyallii* Wats., but the Lyall plant, as already noted, is a species of the north Pacific slope with firm and finally castaneous stipules.

With *U. gracilis* now identified as the northern transcontinental long-petioled species, the "Slender-stalk'd Nettle" of Aiton which has erroneously passed as *U. Lyallii*, it is necessary to find the correct name for the more southern plant with cinereous puberulence which has passed as *U. gracilis*. This seems to be, without question, *U. procera* Muhl. in Willd. Sp. Pl. iv.[1] 353 (1805).

The third indigenous species of northeastern America is with us a plant of the coast, chiefly at the upper borders of beaches, occurring from southeastern Labrador to Maine but reappearing in the Rocky Mountains, from Alberta to New Mexico. It is a lower but coarser plant than either *Urtica gracilis* or *U. procera*, its leaves with glabrous to pilose-hirsute lower surfaces, coarse teeth and short, stout petioles; the leaves subtending the lowest inflorescences having 11–25 (av. 17) pairs of teeth and petioles 0.7–2.5 (av. 1.3) cm. long, only $\frac{1}{8}$–$\frac{1}{4}$ as long as the leaf-blade. Its staminate inflorescences are short and thick and its stipules comparatively long. This short-petioled species was described from the Rocky Mountains as *U. viridis* Rydb. Bull. Torr. Bot. Cl. xxxix. 305 (1912).

Since these three species have all passed as *Urtica gracilis* it is well to reenumerate their diagnostic characters and to cite some characteristic specimens.

U. GRACILIS Ait. Hort. Kew. iii. 341 (1789). *U. cardiophylla* Rydb. Bull. Torr. Bot. Cl. xxiv. 191 (1897). *U. Lyallii* of eastern Am. authors, not Wats.—Slender, 0.3–1 m. high: stem glabrous above or somewhat setulose and sparingly pilose: leaves lanceolate

to ovate, rounded to cordate at base, slender-petioled, glabrous on both surfaces or sparingly pilose beneath, coarsely serrate; those subtending the lowest inflorescences 5–15 (av. 9) cm. long, with 13–23 (av. 17) pairs of teeth and with petioles 1.5–5.5 (av. 3) cm. long and $\frac{1}{5}$–$\frac{3}{5}$ as long as the blade: stipules thin, greenish to straminеous, glabrous to pilose, much shorter than the petioles: inflorescences slender, usually forking, mostly moniliform or interrupted.—Northwestern Newfoundland to northern Maine, western New England and northern New York; Alberta and British Columbia, south to New Mexico and Oregon. The following are characteristic. NEWFOUNDLAND: rich thickets and glades near timber-line, Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,099; springy cliffs and talus above the Overfall of Deer Pond Brook, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 28,103; bushy swale on flat north of Doctor Hill, St. John Bay, *Fernald & Wiegand*, no. 28,104. QUEBEC: Seven Islands, Saguenay Co., *C. B. Robinson*, no. 946; thicket, Dartmouth River, Gaspé Co., *Collins, Fernald & Pease*, no. 5503; limestone detritus in thickets, Les Murailles, Percé, *Fernald & Collins*, no. 1003; calcareous sea-cliffs and rock-slides by the Gulf of St. Lawrence, slightly west of Marten River, Gaspé Co., *Fernald & Pease*, no. 25,029; thickets and wet rock-talus, Nettle Gully, alt. about 400 m., northern base of Mt. Collins, *Fernald & Pease*, no. 25,038 (locality given on label as "Mt. Logan"), *Fernald & Smith*, no. 25,712; Tadousac, August 9, 1892, *G. G. Kennedy*. MAGDALEN ISLANDS: cool wooded bank, Grindstone Island, *Fernald, Long & St. John*, no. 7321; open spruce woods, Basin Island, *Fernald, Bartram, Long & St. John*, no. 7319; sandy bank, Amherst Island, *St. John*, no. 1850. PRINCE EDWARD ISLAND: by brook in woods, Harmony, *Fernald & St. John*, no. 11,033. MAINE: Fort Kent, 1881, *Kate Furbish;* alluvial island, Seven Islands, St. John River, *St. John*, no. 2278. VERMONT: Burlington, August 16, 1901, *L. R. Jones* (probably introduced); Wallingford, May 25, 1908, *E. F. Williams* (probably introduced). CONNECTICUT: roadside, Stafford, August 27, 1903, *Bissell, Graves* (probably introduced). NEW YORK: roadsides, Potsdam, *Phelps*, no. 385 (probably introduced). MONTANA: banks of Missouri River, alt. 3600 ft., *Scribner*, no. 251; Bald Mountain, alt. 7000 ft., *Watson*, no. 357 (distributed as *U. Breweri*). WYOMING: Centennial Valley, *A. Nelson*, nos. 1273, 1862 (as *U. Breweri*). COLORADO: Bob Creek, western La Plata Mts., *Baker, Earle & Tracey*, no. 282; near Pagosa Peak, alt. 9000 ft., *Baker*, no. 281, North Elk Canyon, Rio Blanco Co., July 26, 1902, *Sturgis*. NEW MEXICO: bottom of Moro River, *Fendler*, no. 821; White Mts., alt. 7000 ft., *Wooton*, no. 305; Windsor Creek, alt. 8400 ft., Pecos River National Park, *Standley*, no. 4259. IDAHO: river-bank, St. Anthony, *Merrill & Wilcox*, no. 853. OREGON: mountain streams and bogs, alt. 4000–6000 ft., *Cusick*, no. 2070. WASHINGTON: Columbia River, Klikitat Co., *Suksdorf*, no. 58; near

Ellensburgh, *Brandegee*, no. 1075; low meadows, Pullman, July 10, 1895, *Hardwick, Piper;* along streams in woods, Blue Mts., July 17, 1896, *Piper;* near streams, Waitsburg, *Horner*, no. B443; Montesano, *Heller*, no. 3920; among bushes along streams, Mt. Paddo, *Suksdorf*, no. 6354. British Columbia: Upper Alloknejik Lake, July, 1882, *McKay;* thickets, Beaver Creek, Selkirk Range, July 13, 1885, *Macoun;* deep thicket at Nelson, *Shaw*, no. 667; thickets, Yoho Valley, July 28, 1916, *Hunnewell.*

U. procera Muhl. in Willd. Sp. Pl. iv. 353 (1805). *U. gracilis* of most Am. auth., not Ait. *U. dioica*, v. *procera* (Muhl.) Weddell, Mon. Urt. 78 (1856). *U. longifolia* Raf. acc. to Weddell, l. c. (1856). —Slender and tall, up to 1 m. or more high: stem only slightly if at all bristly but cinereous-pilose or -puberulent toward the summit: leaves oblong-lanceolate to narrowly ovate-lanceolate, usually cinereous-puberulent beneath, slender-petioled, rather closely serrate; those subtending the lowest inflorescences 6.5–18 (av. 11) cm. long, with 19–38 (av. 25) pairs of teeth and with petioles 1.5–8.5 (av. 4.5) cm. long and $\frac{1}{5}$–$\frac{3}{5}$ as long as the blade: stipules submembranaceous, cinereous-puberulent, much shorter than the petioles.—Nova Scotia and southern Quebec to North Dakota, south to North Carolina and Louisiana. The following are characteristic. Quebec: roadside, Lac Mercier to Lac Tremblant, Terrebonne Co., July 29, 1922, *Churchill;* très abondant sur la terre noire de St. Hubert, *Victorin*, no. 17,441; dry pasture, Philipsburg, August, 1923, *Knowlton.* Prince Edward Island: swampy woods and thickets along Brackley Point Road, *Fernald, Long & St. John*, no. 7320. Nova Scotia: open woods about bases of gypsum cliffs, Port Bevis, *Fernald & Long*, no. 21,037; damp thickets near Tusket River, Tusket Falls, *Fernald, Bissell, Graves, Long & Linder*, no. 21,036; rocky roadside, Belleville, *Fernald & Long*, no. 23,786. Maine: moist roadside, Limestone, *Cushman*, no. 2265; river-thicket, Masardis, September 8, 1897, *Fernald;* Fort Fairfield, July 19, 1902, *Williams, Collins & Fernald;* thicket, Bradley, July 17, 1890, *Fernald;* Buckfield, September, 1889, *Parlin;* moist roadside-thickets, Monhegan Island, *Jenney, Churchill & Hill*, no. 3231; river-shore, Topsham, August 29, 1912, *Kate Furbish;* roadside clearing, Baldwin, *Fernald, Long & Norton*, no. 13,511; Kittery Point, August 27, 1895, *E. F. Williams.* New Hampshire: wet roadside, Colebrook, *Pease*, no. 10,904; shaded street, Jefferson, *Pease*, no. 16,704; open roadside, Hillsborough, September 11, 1920, *C. F. Batchelder;* thicket, edge of rich heavy woods, Walpole, August 21, 1916, *Batchelder;* near dwellings, Jaffrey, *Robinson*, no. 297. Vermont: Middlebury, August 7, 1883, *Brainerd;* Weybridge, July 8, 1908, *E. F. Williams;* roadside spring, Wallingford, July 23, 1907, *Kennedy;* Manchester, *Day*, no. 156. Massachusetts: brackish ground, Newburyport, *D. White*, no. 421; farm-yard, Concord, September 27, 1896, *Williams;* near outlet of Spot Pond, Middlesex Fells, August 19, 1920, *Kidder;* Needham,

August 1, 1886, *T. O. Fuller;* North Scituate, August 15, 1901, *Kennedy;* thickets along roadside, Barnstable, *Fernald & Long*, no. 16,724; open grassy roadsides, West Chesterfield, *Robinson*, no. 493; low ground, Monterey, July 7, 1920, *Hoffmann;* alluvium, Lanesboro, July 20, 1915, *Churchill.* RHODE ISLAND: Rumford, September 6, 1903, *Williams;* Wickford, June 17, 1908, *Kennedy.* CONNECTICUT: sandy bank, Thompson, June 10, 1922, *Bill & Grigg;* roadside, Southington, *Bissell*, no. 533; dry thicket, North Guilford, August 19, 1906, *G. H. Bartlett;* roadside waste, Newton, September 26, 1901, *Eames.* NEW YORK: western New York, *Sartwell.* PENNSYLVANIA: shore of Delaware River, Morrisville, *Bartram*, no. 1298. KENTUCKY: Lexington, *Short.* ONTARIO: woods, Hay Island, Gananoque, July 20, 1908, *Kennedy;* Plevna, August 5, 1902, *Fowler;* Belleville, *Macoun*, no. 1584. MICHIGAN: under scattered hardwood, Turin, Marquette Co., July 30, 1901, *Barlow;* Grand Rapids, September 29, 1860, *Wm. Boott.* ILLINOIS: Mahomet, *Gleason*, no. 75; Bloomington, August, 1886, *Robinson.* MINNESOTA: Lake Kilpatrick, Cass Co., July, 1893, *Ballard.* NEBRASKA: Keyapaha Co., *Clements*, no. 2910; woods near Plummer Ford, Dismal River, *Rydberg*, no. 1520. NORTH DAKOTA: prairies, Leeds, July 31, 1896, *Lunell;* black alluvial loam, near Fargo, August 23, 1901, *Waldron & Manns.* KANSAS: bank of Joy Creek, Osborne Co., *Shear*, no. 201.

U. VIRIDIS Rydb. Bull. Torr. Bot. Cl. xxxix. 305 (1912).—Stouter than *U. gracilis*, 2–8 dm. high: stem glabrous, or pilose above: primary leaves lanceolate to narrowly ovate, firm, rounded at base, short-petioled, glabrous on both surfaces or pilose-hirsute beneath, coarsely serrate; those subtending the lowest inflorescences 3.5–10 (av. 7) cm. long, with 11–25 (av. 17) pairs of coarse teeth and with petioles 0.7–2.5 (av. 1.3) cm. long and $\frac{1}{8}$–$\frac{1}{4}$ as long as the blade: stipules lanceolate, with glabrous scarious margins, from one-half as long to longer than the petioles: inflorescences dense and thick; the staminate commonly 3–6 mm. thick.—Straits of Belle Isle, Labrador southward along the coast to Lincoln Co., Maine; Alberta to South Dakota and New Mexico. The following are characteristic. LABRADOR: springy banks and damp hillsides, Forteau, *Fernald & Wiegand*, no. 3279; sand-bank bordering beach, Forteau, *Long*, no. 28,101; abundant by streams on the calcareous sandstone terraces, Blanc Sablon, *Fernald & Wiegand*, no. 3280. NEWFOUNDLAND: turfy barrens and slopes, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 28,100; rich thickets on lower slope of Ha-Ha Mountain, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,097; limestone shingle and gravel along shore, Flower Cove, *Fernald, Long & Dunbar*, no. 26,604; damp thickets, Bear Cove, *Wiegand & Pease*, no. 28,098; turfy limestone shore, St. Barbe, *Fernald, Long & Dunbar*, no. 26,605; sandy shore back of Cow Head, *Fernald & Wiegand*, no. 3278; woods, Lark Harbor, *Waghorne*, no. 29; door-yard, near Frenchman's Cove, *Mackenzie & Griscom*, no. 10,247. QUEBEC: rocky shore, Piashtibaie,

St. John, no. 90,396; sur le rivage calcaire, Ile Herbée, Mingan, *Victorin & Rolland*, no. 18,570; autour des habitations, Pointe-aux-Esquimaux, *Victorin & Rolland*, no. 18,497; abondant sur les rivages, Ilets de la Baie à Jean, *Victorin & Rolland*, no. 18,408; Baie Sainte-Claire, Anticosti, *Victorin*, no. 4197; sur les rivages calcaires, Baie du Renard, Anticosti, *Victorin, Rolland & Louis*, no. 22,053. MAGDALEN ISLANDS: Ile du Hâvre-au-Ber, *Victorin & Rolland*, no. 9627. NEW BRUNSWICK: clearings, Bathurst, *Blake*, no. 5434. MAINE: Machias Seal Island, July 27, 1902, *Mrs. A. H. Norton*; waste ground, Seal Harbor, August 30, 1889, *Redfield;* beach, Great Cranberry Isle, August 20, 1888, *Rand;* south and east shores of Little Cranberry Isle, August 6, 1889, *Redfield;* sandy ridge back of beach, Flye's Island, Brooklin, *Hill*, no. 586; barrier beach, Atlantic, Swans Island, *Hill*, no. 1552; old cellar-hole, Outer Heron Island, Boothbay, *Fassett*, no. 804. NORTH DAKOTA: damp canyons, Deadwood, *Carr*, no. 143. ALBERTA: Rocky Mountains, 1858, *Bourgeau* (cited by Rydberg); Red Deer River, *Macoun*, nos. 200, 1584; thickets, Red Deer Valley, vicinity of Rosedale, *Moodie*, no. 1094; MONTANA: Emigrant Gulch, *Rydberg & Bessey*, no. 3935 (TYPE no.). WYOMING: along the creek, creek bottoms, Halleck Cañon, *A. Nelson*, no. 7444 (cited by Rydberg); Merican Mines, *A. Nelson*, no. 590. COLORADO: Gunnison, *Baker*, no. 601; low wet bottoms, Mancos, *Baker, Earle & Tracy*, no. 40. NEW MEXICO: *Parry*, 1867, no. 196.

Urtica viridis is the North American counterpart of the Asiatic *U. angustifolia* Fisch. In its short-petioled narrow leaves with coarse teeth and often quite glabrous surfaces it exactly matches sheets of the latter from Siberia, Mandchuria and Afghanistan, but all the Asiatic specimens agree with the descriptions in being strictly dioecious, like the Old World *U. dioica*, while *U. viridis* is nearly always definitely monoecious. It is probable that some references to *U. angustifolia* in America belong to *U. viridis*.

As stated in the introductory paragraph Watson's species, *Urtica Lyallii* and *U. Breweri* have both been misinterpreted.

U. Lyallii Wats. Proc. Am. Acad. x. 348 (1875) was primarily "A very large leaved species collected by Dr. Lyall in the Cascade Mts. in lat. 49°" but "more densely hispid" specimens were also cited from Marin Co., California, collected by Bolander and Kellogg ("H. N. BOLANDER, KELLOCK, M. D. & CO." on the label) and a slender plant collected by Lyall on Vancouver Island was cited as "probably the same." The first-cited plant, which was collected by Lyall and which formed the chief basis of the species must be taken as type. This and the Lyall material from Vancouver Island are fortunately conspecific and represent the glabrous or but slightly

pubescent species of Alaska, British Columbia, Washington and Oregon, with slender petioles, ovate, often cordate thin leaves and firm brownish, often finally castaneous stipules. The plant from Marin County is a specimen of the much coarser and more southern *U. Breweri* Wats. (? *U. californica* Greene). *U. Breweri* Wats. l. c. (1875) was based primarily on Brewer's no. 95 from Los Angeles, but specimens collected by Bigelow in western Texas and by Wolf in southern Colorado were also cited. The Brewer plant from Los Angeles, the type of the species, is not at all like the Bigelow and Wolf specimens. The two latter are very characteristic specimens of the *annual* species, *U. gracilenta* Greene. In fact, Watson himself, after originally calling these *U. Breweri*, penciled on the sheet containing them: "Probably distinct species. Lvs. large, thin, coarsely toothed, *few-nerved*, long-petioled. Stupiles *herbaceous*, linear-lanceolate. Calyx villose." Nevertheless, on a sheet of the original material of *U. gracilenta* sent by Greene he penciled " = *U. Breweri*, Watson." The type of *U. Breweri* (Brewer's no. 95 from Los Angeles) consists of two fragments picked obviously late in the season from a large almost woody stem. There are no primary leaves, only those of secondary shoots, but their characteristic pubescence and their firm brown stipules show them to belong apparently to the very characteristic coarse species of the coast of California farther north, afterward described as *U. californica* Greene, Pittonia, i. 281 (1889). The Marin County plant included by Watson under *U. Lyallii* also belongs here (a good match for authentic *U. californica*). Dr. I. M. Johnston informs me that the uncharacteristic fragments which formed the type of *U. Breweri* have not been matched by recent collections from Los Angeles and that the Brewer material might have been collected nearer San Francisco and erroneously labeled.

The widely distributed plant which generally passes as *Urtica Breweri* is quite distinct and no material of it was included by Watson in his original account. As usually incorrectly interpreted, *U. Breweri* is identified as a tall cinereous-puberulent plant with the coarsely toothed narrow leaves velvety-puberulent beneath, and with the lanceolate puberulent stipules drab or greenish, occurring from Idaho and Washington southward through California, Arizona and New Mexico into Mexico. The plant is the western representative of *U. procera* but it seems to be a reasonably distinct species. Its correct name seems to be

U. SERRA Blume, Mus. Bot. Lugd.-Bat. ii. 140 (Nov., 1855). *U. dioica*, *β. angustifolia* Schlecht. Linnaea, vii. 141 (1832), not *U. angustifolia* Fisch. (1819). *U. aquatica* Liebm. K. Dansk. Vidensk. Selsk. Skrift. ser. 5, ii. 291 (1851), not Moon (1824). *U. mexicana* Blume, l. c. (1855), not Liebm. (1851). *U. dioica*, var. *occidentalis* Watson, Bot. U. S. Geol. Expl. Fortieth Par. 321 (1871).

Blume's species, *U. serra* and *U. mexicana*, and the other species (including *Lythraceae*) published at the same time are usually cited as dating from 1852. The latter date appeared on No. 1 of vol. ii. of the *Museum Botanicum*, but in Bot. Zeit. xiv. 186 (1856) Miquel showed that Nos. 1–8 of vol. ii. were not put on sale until 1856; and he later indicated (p. 540) that the four numbers, 9–12, were published respectively in November and December, 1855, and January and February, 1856.

COMANDRA RICHARDSIANA Fernald. Dominant on turfy or peaty knolls in the limestone barrens from Pistolet Bay to St. John Bay. See p. 91. Previously known in Newfoundland only from Mackenzie & Griscom's collection from the Bay of Islands.

OXYRIA DIGYNA (L.) Hill. Wet quartzite rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,115, the first station in Newfoundland since La Pylaie's discovery of it on Grois Island. See p. 124.

RUMEX OCCIDENTALIS Wats. The only indigenous dock of northwestern Newfoundland, frequent in swales or on peaty or turfy shores from Pistolet Bay to St. John Bay. See pp. 54, 118.

SALICORNIA EUROPAEA L., var. PROSTRATA (Pall.) Fern. Damp depressions in sand and gravel back of barrier beach, Argentia, *Fernald, Long & Dunbar*, no. 26,644; the first in Newfoundland except from Bay St. George and Port-à-Port Bay. See p. 86.

SUAEDA RICHII Fernald. Damp depressions in sand and gravel back of barrier beach, Argentia, *Fernald, Long & Dunbar*, no. 26,645, the first fruiting material from Newfoundland. Records of young plants from Bay St. George and Notre Dame Bay probably belong here. See p. 86.

ARENARIA DAWSONENSIS Britton (*A. litorea* Fernald). Depressions of limestone barrens along the Straits, widely distributed but rather local; previously unknown from north of Bay of Islands and Notre Dame Bay. See p. 62.

A. CYLINDROCARPA Fernald. Widely distributed in clay and gravel of the limestone barrens from Pistolet Bay to Port-à-Port Bay. See p. 79.

STELLARIA FLORIDA Fischer. Springy swale and turfy upper border of strand, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, nos. 28,196, 28,197; a Kamtchatkan species collected for the first time in America in 1923 on Tabletop Mts., Gaspé. See p. 123.

Cerastium alpinum L. The typical form of the species was seen only once: mossy brooksides and damp turfy slopes, Sacred Island, *Fernald & Long*, no. 28,208, probably new to Newfoundland.

C. alpinum, var. glanduliferum Koch. Dry limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,204, new to Newfoundland.

C. alpinum, var. lanatum (Lam.) Hegetschw. Common on turfy or gravelly slopes or on cliffs from Quirpon westward to Four-Mile Cove. See pp. 54, 98.

C. Regelii Ostenf. Limestone ledges on the west side of Schooner (Brandy) Island, Pistolet Bay, *Pease & Long*, no. 28,212. See p. 106. An arctic Eurasian species heretofore known in America only from Cape Nome, Alaska (*Blaisdell*), the material of the latter collection identified by Dr. Ostenfeld.

C. cerastioides (L.) Britton. Wet mossy rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,231, the only known station, except Tabletop Mts., Gaspé, south of northern Labrador. See p. 124. Only a single over-ripe specimen was noticed, snatched at the last moment after the order to quit had been given. It was on gravel at the forks of the Gulch and had presumably washed down from higher up.

C. viscosum L. Turfy roadside, Burgeo, *Fernald, Long & Dunbar*, no. 26,678, an obvious adventive, new to Newfoundland.

Ranunculus hyperboreus Rottb. Brooksides and springy calcareous meadows, Savage Cove, *Fernald, Long & Dunbar*, no. 26,686, *Fernald & Griscom*, no. 28,251; dried-out shallow pools in limestone barrens, Sandy (Poverty) Cove, *Fernald, Long & Gilbert*, no. 28,252; swaley margin of pool in limestone barrens, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 26,685; shallow water of old beaver pond near the Yellow Marsh, back of Bard Harbor, St. John Bay, *Gilbert & Hotchkiss*, no. 28,253. See pp. 61, 127. New to Newfoundland, the old records having been based on either *R. Cymbalaria* Pursh or *R. hederaceus* L.

R. pedatifidus J. E. Sm., var. leiocarpus (Trautv.) Fern. (*R. affinis* R. Br.). Turfy or gravelly shelves, crests and talus of diorite cliffs, Ha-Ha Mountain, *Pease & Griscom*, no. 28,258, *Fernald & Long*, no. 28,259; mossy and turfy trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 28,260; the first stations south of the Torngat region of Labrador. See pp. 104, 123, also pl. 153, fig. 3.

R. pensylvanicus L. f. Boggy meadows and clearings, back of Bard Harbor, St. John Bay, very scarce, *Wiegand, Gilbert & Hotchkiss*, no. 28,266, the first authentic station except from the lower Exploits.

R. Macounii Britton. Brookside in bushy swale on flat north of Doctor Hill, St. John Bay, no. 28,267, the first from north of Hawke Harbour. See p. 127.

ANEMONE MULTIFIDA Poir. var. HUDSONIANA DC. Dry limestone cliffs and talus, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 28,278, our only station except on the lower Exploits and Notre Dame Bay. See p. 126.

BARBAREA ORTHOCERAS Ledeb. Peaty borders of spruce thickets, Savage Cove, *Fernald & Griscom*, no. 28,317; brooksides and slaty hills, Little Quirpon, *Wiegand, Gilbert & Hotchkiss*, no. 28,318, *Fernald & Gilbert*, no. 28,319, *Wiegand & Hotchkiss*, no. 28,320; our first stations outside the Exploits Valley. See p. 121.

CARDAMINE PRATENSIS L., var. ANGUSTIFOLIA Hook. Dominant in peat and damp turf on the limestone barrens from Pistolet Bay westward to Deadman Cove, the first area known south of northern Labrador. See p. 91.

LESQUERELLA ARCTICA (Wormskj.) Wats. Dry gravelly limestone barrens, Burnt Cape to Big Brook; St. John's Island; previously known from Table Mt., Port-à-Port Bay and Cape St. George. See pp. 100, 103, 118.

L. arctica, var. *Purshii* Wats., seems to have no characters of value.

DRABA NIVALIS Lilj. Gravelly shelves, crests and talus of Ha-Ha Mountain, *Pease & Griscom*, no. 28,342; crevices of trap cliffs, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 28,347; open peaty and gravelly spots on crests of trap cliffs, Cape Onion, *Fernald & Long*, no. 28,346; dry slaty crests of hills, Little Quirpon, *Fernald & Long*, no. 28,343; rocky crests of Cape Dégrat, Quirpon Island, *Fernald & Long*, no. 28,344; new to Newfoundland. See pp. 104, 121, 123.

DRABA INCANA L. Typical *D. incana* with glabrous fruit is rare on the Straits: gravelly limestone shore, Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 28,348.

D. INCANA, var. CONFUSA (Ehrh.) Poir. Abundant on peaty and turfy calcareous slopes and shores from Pistolet Bay to Cow Head. See pp. 60, 90.

D. MEGASPERMA Fern. & Knowlt. Peaty and gravelly limestone shores from Quirpon to Brig Bay. See pp. 53, 90.

D. ARABISANS Michx. Limestone cliffs and talus, western escarpments of Bard Harbor Hill and Doctor Hill, Highlands of St. John; only stations north of Bay of Islands. See p. 117.

D. PYCNOSPERMA Fern. & Knowlt. Dry limestone cliffs and talus, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 28,369; heretofore known only from the type region, Percé, Gaspé Co., Quebec. See. p. 125.

D. HIRTA L. Dominant on calcareous areas, northwestern Newfoundland. See p. 90.

D. RUPESTRIS R. Br. Dominant on calcareous areas, northwestern Newfoundland. See pp. 60, 90.

Arabis Drummondi Gray. Meadow below limestone escarpment, western face of Bard Harbor Hill, *Fernald & Long*, no. 28,422; only known Newfoundland station except along lower Exploits. See p. 124.

A. Drummondi, var. connexa (Greene) Fernald. Mossy and turfy trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 28,421; dryish limestone talus, western face of Doctor Hill, *Fernald & Long*, no. 28,420; new to Newfoundland. See p. 123.

Braya **Longii**, n. sp., planta perennis humilis plerumque multiceps; radice crassa longe descendenti; caulibus adscendentibus saepe purpurascentibus 1–10 cm. longis rare fructiferis usque ad 15 cm. longis nudis vel sub racemo monophyllis, pilis simplicibus bifurcatisque inaequilongis griseis sparse obsitis; foliis rosulatis carnulosis linearioblanceolatis obtusis 1–4 cm. longis 1–3 mm. latis integris glabris vel basi dilatato apiceque sparse ciliatis; racemo sub anthesi dense corymboso, fructifero plus minusve elongato 1–7 cm. longo 3–20-floro, fructibus contiguis vel infimis 1–2 distantibus; pedicellis crassis 1–4.5 mm. longis fructiferis arcte adscendentibus; sepalis deciduis plerumque viridibus rare purpurascentibus glabris 2–3 mm. longis oblongis vel ellipticis apice rotundatis margine hyalinis; petalis 4–5.5 mm. longis late obovatis albis tandem basin versus violaceis; staminibus 2–3 mm. longis; antheris 0.4–0.6 mm. longis; pistillo lanceolato glabro, ovario ovulis 10–16, stylo crasso cylindrico, stigmate depresso stylo latiore bilobato; siliquis lanceolato-subulatis 4–9 mm. longis 1–2 mm. latis stylo crasso 0.4–0.8 mm. longo coronatis, valvis glabris, septo albo uninervo vel enervo; seminibus oblongo-ovatis brunneis 1.2–1.5 mm. longis 0.5–0.8 mm. latis.—Shores of the Straits of Belle Isle, northwestern Newfoundland: turfy or peaty pockets in limestone ledges, Sandy (or Poverty) Cove, August 1, 1924, *Fernald, Long & Dunbar*, no. 26,723 (distributed as *B. purpurascens*); among loose rocks, limestone barrens, Sandy Cove, July 12, 1925, *Fernald & Griscom*, no. 28,423; gravelly and peaty limestone barrens, Sandy Cove, July 25, 1925, *Fernald, Long & Gilbert*, no. 28,424 (type, in Gray Herb.); dry gravelly limestone barren, Savage Point, July 13, 1925, *Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss*, no. 28,425; dry gravelly and turfy limestone barrens, Savage Point, August 29, 1925, *Fernald & Long*, no. 28,426; crevices of limestone barrens, Yankee Point, August 16, 1925, *Fernald, Wiegand & Long*, no. 28,427.

A beautiful species, originally detected by my companion on many hard trips, Bayard Long, to whose keenness in the field we owe many of the most interesting discoveries of the recent Newfoundland trips. *B. Longii* superficially resembles *B. purpurascens* (R. Br.) Bunge of the Arctic, with which the first collection was placed. It differs, however, in its narrower basal leaves; sparser but more often forking

pubescence of the stems; longer and broader petals; glabrous (not pilose) ovary and silique, the latter lance-subulate rather than ellipsoid or oblong-ovoid; and fewer (in *B. purpurascens* 16–20) and slightly larger seeds. In having seeds fewer than in *B. purpurascens*, *B. Longii* comes closer to *B. rosea* (Turcz.) Bunge of Siberia; but that species, of which three authentic collections are before me, has broader leaves; the stems very densely pilose with long hairs; the purple sepals 1.8–2.2 mm. long and densely pilose on the back; the narrowly obovate or spatulate-oblanceolate petals becoming wholly roseate and only 2.5–3.5 mm. long; the mature fruiting raceme but slightly elongated; the mature pedicels slender and elongating sometimes to 8 mm.; and the capsule oblong-ellipsoid and at most 6 mm. long. See pp. 77, 94.

Braya **americana** (Hook.) n. comb. *B. alpina*, *β. americana* Hook. Fl. Bor.-Am. i. 65 (1830). Planta perennis plerumque multicaulis; caulibus adscendentibus 1–10 cm. longis teretibus simplicibus purpurascentibus, pilis furcatis brevibus inaequalilongis griseis obsitis; foliis rosulatis carnulosis lineari-oblanceolatis 0.6–3 cm. longis 0.5–2 mm. latis integris glabris vel basi apiceque plus minusve ciliatis; racemo sub anthesi capitato-corymboso, fructifero 0.7–7 cm. longo densiuscule 3–20-floro, floribus infimis 1–3 distantibus plerumque in axillis foliorum superiorum; pedicellis 1–4 mm. longis arcte adscentibus; sepalis subpersistentibus plerumque purpurascentibus 1.5–2.5 mm. longis oblongis apice rotundatis margine hyalinis: petalis 1.5–4 mm. longis spathulato-oblanceolatis vel anguste obovatis albidis deinde roseis apice rotundatis; staminibus 1.5–3.5 mm. longis, antheris 0.3–0.5 mm. longis; pistillo lanceolato, ovario ovulis 10–16 pilis plerumque bifurcatis hirto, stylo gracili ovario valde angustiori, stigmate depresso-capitato stylo valde latiori manifeste bilobato; siliquis lanceolato-subulatis 4–7 mm. longis 1.3–2 mm. latis stylo gracili 0.5–1 mm. longo coronatis, valvis hirtellis, septo manifeste uninervo; seminibus anguste ovoideis 1–1.4 mm. longis 0.5–0.7 mm. latis brunneis.—Alberta and Newfoundland. The following have been examined. Alberta: Cataract Pass below Summit, August 4, 1908, *S. Brown*, no. 1457 (as *B. purpurascens*). Newfoundland: open soil on limestone barrens near Ice Point, St. Barbe Bay, July 14, 1925, *Wiegand, Gilbert & Hotchkiss*, no. 28,429; gravelly limestone barrens one mile back of Savage Cove, Straits of Belle Isle, July 14, 1925, *Fernald & Long*, no. 28,428, July 23, *Fernald, Pease & Long*, no. 28,438; gravelly limestone barren, Four-mile Cove, Straits of Belle Isle, July 20, 1925, *Fernald, Wiegand & Long*, no. 28,437; moist gravel of limestone barrens on the Highlands northeast of Big Brook, Straits of Belle Isle, July 15, 1925, *Pease & Griscom*, no. 28,430; gravelly and peaty limestone barrens back of Big Brook, July 15,

1925, *Fernald & Long*, no. 28,431; swale near mouth of brook, Watts Bight, Straits of Belle Isle, July 19, 1925, *Pease, Griscom, Gilbert & Hotchkiss*, no. 28,436; sandy and clayey spots in limestone gravel-barrens, Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 28,435; dry rocky and gravelly limestone barrens and boggy depressions in limestone barrens, Cape Norman, July 18, 1925, *Wiegand, Griscom & Hotchkiss*, nos. 28,433, 28,434, August 13, 1925, *Wiegand & Long*, no. 28,440; dry limestone barrens, Burnt Cape, Pistolet Bay, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,432, August 5, 1925, *Fernald & Long*, no. 28,439.

Although I have not seen the Drummond material upon which Hooker founded *Braya alpina, β. americana*, there is scarcely any question that the plant of northern Newfoundland with small pinkish flowers and hirtellous siliques is identical with the Drummond plant. After detailed study I placed the Newfoundland material close to *B. alpina* Sternb. & Hoppe of the European alps. From that species it differs in its narrower leaves, mostly shorter pedicels and sepals, much narrower petals with rounded rather than emarginate apex, slender and columnar rather than tumid style, broader and sharply defined stigma, and shorter lance-subulate rather than linear-cylindric siliques. The only material at hand from the region whence Drummond collected the type of *B. alpina, β. americana* is Stewardson Brown, no. 1457. That material is so close to the Newfoundland plant that at least until one knows more about it, it would be quite unwise to attempt to separate them. Brown's material is in anthesis, Drummond's was in fruit; but the one point emphasized by Hooker, "stylo longiusculo gracili" is clearly shown in it.

O. E. Schulz[1] places *B. alpina, β. americana* with doubt under the Siberian *B. siliquosa* Bunge; but, as he clearly states, Bunge's species has linear siliques up to 1.5 cm. long. These are well shown by Trautvetter,[2] who also illustrates the leaves as broadly oblanceolate and definitely toothed. The American plant with its more slender and strictly entire leaves and its very short siliques is certainly not *B. siliquosa*. See pp. 96, 97, 98, 106.

? Braya Richardsonii (Rydb.) Fern. Sandy and clayey spots in limestone gravel-barrens, Boat Harbor, *Fernald, Wiegand & Long*, no. 28,441, very scarce, only two sterile plants found, but apparently the Canadian Rocky Mt. species. See p. 107.

[1] O. E. Schulz in Engler, Pflanzenr. iv.[105] 231 (1924).
[2] Trautv. Imag. Descr. Fl. Ross. 34, t. 23 (1844).

(*To be continued.*)

LICHENS OF THE GASPÉ PENINSULA, QUEBEC.

Carroll W. Dodge.

(*Continued from p. 161.*)

Baeomyces roseus Pers. Gaspé coast, *Macoun 165;* *Cap Rosier, *Macoun.*

Cladonia rangiferina (L.) Web. emend. Vainio. Lac Perré, *Dodge 2709,* Tabletop Range; Mt. Albert, *Dodge 2880, Collins 4177 k.*

C. sylvatica (L.) Hoffm. var. sylvestris Oed. Mt. Dunraven, *Dodge 2306,* Tabletop range; Gaspé, *Macoun 93;* Mt. Albert *Collins 4177 l.*

C. impexa Harm. var. laxiuscula Del. Castle Ridge, *Collins 4509D,* Tabletop range (Moribund); R. Ste. Anne des Monts *Collins 4645 n 4645 q.*

C. alpestris (L.) Rabenh. between Mt. Logan and Mt. Pembroke, *Dodge 2289,* Logan range; Mt. Albert, *Dodge 2881, Collins 4123a, 4177m;* Gaspé, *Macoun 171.*

C. bacillaris Nyl. var. elegantior Vainio. base of Big Chimney, Mt. Mattaouisse, *Dodge 2831,* Logan range.

C. macilenta Hoffm. var. styracella (Ach.) Vainio. Matane, *Dodge 2140.*

? C. digitata (Hagen) Schaer. between Mt. Pembroke and Mt. Couvert de Chaudron, *Dodge 2622,* Logan range.

C. coccifera (L.) Willd. *C. cornucopioides* (L.) Fr. var. pleurota (Floerke) Schaer. top of Mt. Albert, *Dodge 2288, Collins 4177d;* cliffs above Lac Pleureuse, *Dodge 2156.* Var. Stemmatina Ach. base of Big Chimney, Mt. Mattaoiusse, *Dodge 2832,* Logan range; *Collins 4400;* Granite Block Pond, *Collins 4427F,* Tabletop range (under *C. deformis* Hoffm., Riddle Herb.). Var. coronata Del. gorge of northeast branch of the R. Ste. Anne des Monts, *Dodge 2172,* Tabletop range.

? C. corallifera (Kunze) Nyl. var. transcendens Vainio. base of Big Chimney, Mt. Mattaouisse, *Dodge 2867,* Logan range, (known only from the type collection of Lyall on the Oregon Boundary Commission, no authentic material seen but a specimen in the Farlow Herb. collected by Lyall, agrees well with the description).

C. deformis Hoffm. Fernald Pass, *Dodge 2174,* between Mt. Couvert de Chaudron and Mt. Pembroke, *Dodge 2621,* Logan range; Mt. Ablert, *Collins 4177e;* Lac Perré, *Dodge 2169,* Tabletop range. F.

GONECHUS (Ach.) Nyl. *C. sulphurina* (Michx.) Fr. between Mt. Pembroke and Mt. Couvert de Chaudron, *Dodge 2623*, Big Chimney Mt. Mattaouisse, *Dodge 2868*, Logan range. Var. ELEPHANTIASICA Del. in Dub. Island in Lac Perré, *Dodge 2304*, Tabletop range.

C. CRISTATELLA Tuck. Gaspé coast, *Macoun 119* (nearly sterile). Var. VESTITA Tuck. between Mt. Logan and Mt. Pembroke, *Dodge 2287*. Var. BEAUVOISII (Del.) Vainio. Big Chimney, Mt. Mattaouisse, *Dodge 2648, 2830*, Logan range. Var. RAMOSA Tuck. Big Chimney, Mt. Mattaouisse, *Dodge 2771*, Logan range.

C. UNCIALIS (L.) Web. m. DICRAEA Ach. Big Chimney, Mt. Mattaouisse, *Dodge 2833*, Logan range. Mod. INTEGERRIMA Vainio. Mt. Albert, *Collins 4177b*.

C. RANGIFORMIS Hoffm. var. PUNGENS (Ach.) Vainio. Big Chimney, Mt. Mattaouisse, *Dodge 2834*, Logan range; Mt. Dunraven, *Dodge 2710*, Lac Perré, *Dodge 2170*, Tabletop range.

* C. DELICATA (Ehrh.) Floerke. Fink list.

C. SUBSQUAMOSA Nyl. var. PULVERULENTA Nyl. Big Chimney, Mt. Mattaouisse, *Dodge 2835*, Logan range. Var. LUXURIANS Nyl. Big Chimney, Mt. Mattaouisse, *Dodge 2836*, Logan range.

C. FURCATA (Huds.) Schrad. var. SCABRIUSCULA (Del.) Coem. Mt. Albert, *Collins 4177n*; Baker's woods, Gaspé, *Macoun 170*.

C. CRISPATA (Ach.) Flot. var. SCHISTOPODA Vainio. (*C. symphycarpa* of Macoun's list) Gaspé county, *Macoun 81*. Var. SUBCRISPATA (Nyl.) Vainio. *C. Novae-Angliae* Merrill not *Cenomyce Novangliae* Del. Percé, *Macoun, 148*. Var. VIRGATA (Ach.) Vainio. Mt. Albert, *Collins 4177g*.

C. SQUAMOSA (Scop.) Hoffm. var. MURICELLA (Del.) Vainio. Big Chimney, Mt. Mattaouisse, *Dodge 2773*, Logan range; Gaspé coast, *Macoun*.

C. CENOTEA (Ach.) Schaer. var. CROSSOTA (Ach.) Nyl. between Mt. Pembroke and Couvert de Chaudron, *Dodge 2628*, Logan range.

C. TURGIDA (Ehrh.) Hoffm. Gaspé coast, *Macoun;* Baker's woods, Gaspé, *Macoun 151*. Var. STRICTA Nyl. Gaspé, *Macoun 218*. Var. SCYPHIFERA Vainio. Gaspé, *Macoun 152;* Mt. Albert, *Collins 4177c*; Tabletop range, *Collins 4428f*.

* C. CARIOSA (Ach.) Spreng. Cap Rosier, Fox River, *Macoun*.

C. GRACILIS (L.) Willd. var. DILATATA (Hoffm.) Vainio. Matane, *Dodge 2134*. Mod. ANTHOCEPHALA Floerke. R. Cap Chat, *Dodge 2145*. Var. ELONGATA (Jacq.) Floerke. Lac Perré, *Dodge 2157*, Mt. Dun-

raven, *Dodge 2158*, Tabletop range; between Mont Louis and Lac Mont Louis, *Dodge 2173*. Var. DILACERATA Floerke. Matane, *Dodge 2137;* R. Ste. Anne des Monts, *Collins 4645s*. Var. CHORDALIS (Floerke) Schaer. Big Chimney, Mt. Mattaouisse, *Dodge 2770*, between Mt. Pembroke and Mt. Logan, *Dodge 2627*, *2713*, Logan range; R. Ste. Anne des Monts, *Dodge 2680;* Lac Perré, *Dodge 2686*, *2687*, *2688*, Granite Block Pond, *Collins 4427B*, gorge of northeast branch of the R. Ste. Anne des Monts, *Dodge 2168*, Tabletop range. Mod. ASPERA Floerke. R. Cap Chat, *Dodge 2855;* Big Chimney, Mt. Mattaouisse, *Dodge 2837*, Logan range. Mod. LEUCOCHLORA Floerke. Big Chimney, Mt. Mattaouisse, *Dodge 2838*, Logan range; Gaspé, *Macoun*.

? C. CERASOPHORA Vainio (an *C. gracilis* (L.) Willd. var. *elongata* (Jacq.) Floerke) between Mt. Mattaouisse and Mt. Collins, *Dodge 2869*, Logan range.

C. CORNUTA (L.) Schaer. forma PHYLLOTOCA Floerke. Baker's woods, Gaspé, *Macoun 150*.

C. PYXIDATA (L.) Hoffm. ampl. Fr. var. NEGLECTA (Floerke) Schaer. Big Chimney, Mt. Mattaouisse, *Dodge 2774*, Logan range. Forma MACROPHYLLA (Müll.-Arg.) Vainio. Lac Perré, *Dodge 2798*, Tabletop range. Forma PROLIFERA Arn. Big Chimney, Mt. Mattaouisse, *Dodge 2839*, Logan range. Var. CHLOROPHAEA (Spreng.) Floerke. R. Ste. Anne des Monts, *Dodge 2861*. Mod. COSTATA Floerke. Gaspé, *Macoun 140*. Forma PROLIFERA (Wallr.) Arn. R. Ste. Anne des Monts, *Dodge 2679*.

C. FIMBRIATA (L.) Fr. var. SIMPLEX (L.) Fr. mod. MAJOR (Hagen) Vainio. Big Chimney, Mt. Mattaouisse, *Dodge 2769*, Logan range; Capucins, *Collins 4688b*. Mod. MINOR (Hagen) Vainio. Big Chimney, Mt. Mattaouisse, *Dodge 2840*, Logan range. *Var. CONIOCRAEA (Floerke) Vainio. Fink list. *Var. RADIATA (Schreb.) Coem. Little Fox River, *Macoun*.

C. PITYREA (Floerke) Fr. var. ZWACKII Vainio. mod. CLADOMORPHA Floerke. Big Chimney, Mt. Mattaouisse, *Dodge 2775*, Logan range.

* C. DEGENERANS (Floerke) Spreng. Mt. Albert, *Macoun*.

C. VERTICILLATA (Hoffm.) Schaer. forma APOTICTA (Ach.) Vainio. R. Cap Chat, *Dodge 2286*.

(*To be continued.*)

Concerning Solidago humilis.—In Rhodora (**17**: 6), the name *Solidago humilis* Pursh was taken up by Prof. M. L. Fernald in place of *Solidago uliginosa* Nutt. on the grounds of priority. In this article the statement is further made that "those authors who had set aside the name *S. humilis* Pursh (1814) on account of a supposed earlier "*S. humilis*" of Miller (1768) could not have verified their references, for Miller had published not "*S. humilis*," but *S. humilius*, a name in the comparative degree (neuter) and certainly not the same name as *S. humilis*."

As *Solidago* is a feminine noun, it seemed to me hardly conceivable that Miller intended to use the adjective "*humilius*" with it. Investigation disclosed that the name was printed "*humilius*" merely by typographical error. He corrected the spelling to "*humilis*" in his list of corrections at the end of his work, and he used the name as *Solidago humilis* in the sixth edition of his Gardener's dictionary abridged published three years later. The Index Kewensis quite correctly gives Miller's name as *Solidago humilis*.

Miller's description of *Solidago humilis* leads me to believe that he was describing the plant which was later described by Aiton as *Solidago nemoralis*. Miller's name is an appropriate one for this plant and Aiton's is a very inappropriate one. Pending further investigation, I am not making this change as yet.—Kenneth K. Mackenzie, Maplewood, New Jersey.

Parthenium auriculatum in Burke County, North Carolina.—In June, 1926, the writer found a colony of *Parthenium auriculatum* Britton on a wooded hillside about five miles southeast of Morganton, N. C. Morganton (altitude about 1100 feet) is located in western North Carolina among mountains which are a continuation of similar ranges in southwestern Virginia. This is a noteworthy extension of range, the species previously having been known only from the mountains of Virginia. A specimen has been deposited in the United States National Herbarium.—O. M. Freeman, Bureau of Plant Industry, Washington, D. C.

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Vol. 28. November, 1926. No. 335.

SERICOCARPUS BIFOLIATUS AN INVALID NAME.

S. F. Blake.

For more than thirty years the name *Sericocarpus bifoliatus* (Walt.) Porter has been in widespread use for the white-topped aster known to earlier botanists as *Sericocarpus tortifolius* (Michx.) Nees. Examination of Walter's Flora Caroliniana makes it clear that continued use of Walter's name is unjustifiable. Walter has three species of *Conyza*, *C. linifolia*, *C. asteroides*, and "*C. bifoliata?*". The names of all three, as well as the descriptions of the first two, are taken directly from the second edition of Linnaeus' Species Plantarum. Walter's description[1] of *C. bifoliata*, although clearly based on that of Linnaeus,[2] differs from the latter sufficiently to explain his use of the interrogation point in connection with the name. Presumably the fact that his plant had entire leaves, while those of Linnaeus' Indian plant were dentate, seemed to Walter of much more importance as an indication of possible specific distinctness than the difference in habitat.[3] In any case, it is clear that Walter had no intention of proposing a new species but was merely doubtfully identifying a Carolina plant with *Conyza bifoliata* L., and it is equally clear that Walter's use of the Linnaean name cannot be taken as the basis for the designation of this species in the genus *Sericocarpus*. We must consequently adopt once more the name *Sericocarpus tortifolius* borne by the plant for

[1] "bifoliata? 3. foliis ovalibus integris mollibus sessilibus tortuosis, pedunculis diphyllis trifloris bracteis oppositis." Fl. Carol. 204. 1788.

[2] "Conyza foliis ovalibus dentatis, pedunculis diphyllis: bracteis oppositis." Sp. Pl. ed. 2, 2: 1207. 1763.

[3] Linnaeus' next species, *Conyza tortuosa*, is given the range: "Habitat in Magdagascar, Vera Cruce." If Linnaeus could treat plants from Madagascar and Vera Cruz as identical, Walter may be pardoned for considering his third Carolina *Conyza* possibly identical with an Indian species.

over half a century preceding the proposal of *Sericocarpus bifoliatus*. The synonymy of the species and of its doubtfully distinguishable variety with toothed leaves will then stand as follows:

SERICOCARPUS TORTIFOLIUS (Michx.) Nees, Gen. & Sp. Ast. 151. 1832.

Conyza bifoliata? Walt. Fl. Carol. 204. 1788 (erroneous identification of *C. bifoliata* L.).

Aster tortifolius Michx. Fl. Bor. Amer. **2**: 109. 1803.

Aster scabrosus Bertol. Nov. Comm. Acad. Bonon. **8**: 389. *pl. 33.* ("Misc. Bot. **6**: 29. *pl. 4.*") 1846.

Sericocarpus bifoliatus (Walt.) Porter, Mem. Torr. Club **5**: 322. 1894.

SERICOCARPUS TORTIFOLIUS var. COLLINSII (Nutt.) Torr. & Gray, Fl. N. Amer. **2**: 103. 1841.

Aster Collinsii Nutt. Journ. Acad. Nat. Sci. Philad. **7**: 82. 1834.

Sericocarpus Collinsii Nutt. Trans. Amer. Phil. Soc. II. **7**: 302. 1840.

Sericocarpus bifoliatus var. *Collinsii* Blake, Proc. Amer. Acad. **51**: 515. 1916.

BUREAU OF PLANT INDUSTRY, Washington, D. C.

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND.

M. L. FERNALD.

(*Continued from p. 204.*)

TILLAEA AQUATICA L. Sandy and peaty margin of pond back of barrier beach, Argentia, *Fernald, Long & Dunbar,* no. 26,737, new to Newfoundland. See p. 86.

SAXIFRAGA RIVULARIS L. Wet quartzite rocks and seepy banks along upper Deer Pond Brook, Highlands of St. John, *Fernald & Long,* no. 28,453; wet mossy cliffs, lower Deer Pond Brook, *Gilbert & Hotchkiss,* no. 28,455; cool damp pockets in rocky crests, Cape Dégrat, Quirpon Island, *Fernald & Long,* no. 28,454. See pp. 116, 121. Previously reported only from St. Anthony.

S. STELLARIS L., var. COMOSA Poir. Crests of wet quartzite cliffs along upper Deer Pond Brook, Highlands of St. John, *Fernald & Long,* no. 28,464, new to Newfoundland. See p. 117.

PARNASSIA KOTZEBUEI C. & S. Mossy brooksides and damp turfy slopes, Sacred Island, *Fernald & Long,* no. 28,475; mossy and turfy trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long,* no. 28,476; limestone cliffs, western face of Doctor

Hill, Highlands of St. John, *Fernald & Long*, no. 28,477; new to Newfoundland. See pp. 122, 123, 125.

P. PARVIFLORA DC. Extending northward on the West Coast to St. Barbe Bay. See p. 79.

PARNASSIA **multiseta** (Ledeb.), n. comb. *P. palustris, β. multiseta* Ledeb. Fl. Ross. i. 263 (1842).

Ledebour's only character for his *P. palustris, β. multiseta* was the numerous (15–23) setae or filaments to each staminodial scale. Ledebour cited two specimens, one collected by Frisch near Baschurow on the Argun River, the other collected by Rieder in Kamtchatka. Material of Rieder's collection is in the Gray Herbarium and in its petals as well as in the staminodial scales it is quite like the American plant which passes as *P. palustris* but unlike true *P. palustris* of Europe and much of Asia. The contrasts between the two are indicated below.

P. PALUSTRIS L. Calyx-lobes subcoriaceous, lanceolate, elliptic or narrowly obovate, obtuse, 4–7 mm. long, 7–13-nerved: petals rounded or emarginate at tip, conspicuously 7–13-nerved, with brownish lines: anthers 2.3–3 mm. long: staminodial scale longer than broad, abruptly contracted to a long narrow claw, with 9–15 filaments: capsule with a short slender beak: seeds linear-oblong, dark-brown.

P. MULTISETA (Ledeb.) Fern. Calyx-lobes subherbaceous, linear to lance-oblong, subacute, (4–) 6–11 mm. long, 3–7-nerved: petals narrowed to rounded, only rarely emarginate at tip, faintly 5–9-nerved, with paler lines: anthers 1.5–2.3 mm. long: staminodial scale as broad as or broader than long tapering to a short broad base, with 9–23 filaments: capsule beakless: seeds short-oblong to oval, pale-brown.

The following specimens of *P. multiseta* are before me.—LABRADOR: Flint Island, near Port Manvers, August 22, 1908, *Owen Bryant;* Hopedale, 1920, *W. W. Perrett;* Esquimaux Island, Hamilton Inlet, *Bowdoin College Exped.* no. 275. UNGAVA: Ungava River, *Spreadborough*, no. 14,280. NEWFOUNDLAND: brooksides on slaty hills back of Little Quirpon, *Fernald & Gilbert*, no. 28,481; marsh back of strand near Isthmus Cove, Pistolet Bay, *Wiegand, Gilbert & Hotchkiss*, no. 28,480; sandy, gravelly and turfy upper border of beach, Cook Point, Pistolet Bay, *Fernald, Gilbert & Hotchkiss*, no. 28,482; wet places, Flower Cove, August 2, 1920, *M. E. Priest;* turfy limestone barrens, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 26,749; springy swale south of the Hospital, Flower Cove, *Fernald, Long & Dunbar*, no. 26,750; turfy limestone shore, St. Barbe, *Fernald, Long & Dunbar*, no. 26,751; turfy shore of Derby's Tickle, at mouth of Otter Pond Brook, Brig Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,483. ONTARIO: Maitland, Huron Co., 1869, *W.*

White; Pic River, *Loring;* clay soil, Onaman River, Thunder Bay Distr., 1912, *Pulling,* Michigan: Isle Royale, *Cooper*, no. 122. Manitoba: Churchill, *J. M. Macoun*, no. 79,233. Minnesota: Turtle Lake, August, 1892, *Sheldon;* Clithwall, July, 1897, *Campbell.* North Dakota: boggy meadows, Devil's Lake, July 30, 1838, *Nicollet;* low meadows, Turtle Mountains, July 23, 1902, *Lunell.* Mackenzie: Slave River, July 30, 1892, *Elizabeth Taylor.* Saskatchewan: without locality, 1858, *Bourgeau;* 20 miles west of Yorkton, *Herriot*, no. 70,747. Alberta: Milk River, *John Macoun*, no. 10,569; Banff, *Canby*, no. 85. British Columbia: Rocky Mts. lat. 49° N., 1861, *Lyall.* Yukon: Whitehorse, *Eastwood*, no. 624; Dawson, 1896, *Kusche;* Carmacks, *Eastwood*, no. 570. Alaska: along river, Skagway, *Eastwood*, no. 771; Kodiak, *Kellogg*, no. 226; Attu Island, *J. M. Macoun*, no. 86; lower Kuskakwim River, August, 1898, *F. C. Hinckley;* bank of Anvik River, *Chapman*, no. 22; near Fort Selkirk, Yukon River, *Schwatka*, no. 99; Fort Yukon, July 13, 1902, *H. E. Brooks;* Cape Blossom, 1884, *McLenegan;* Cape Nome, 1900, *Blaisdell;* St. Michaels, 1865–66, *Bannister;* Kotzebue Sound, *Chamisso;* Eschscholtz Bay, *Chamisso.* Kamtchatka: without locality, *Rieder* (co-type of *P. palustris, β. multiseta*); Bering Island, 1883, *Steineger.*

Sibbaldia procumbens L. Wet quartzite rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,505, new to Newfoundland. See p. 124.

Potentilla pectinata Raf. Dry limestone cliffs, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 28,517; otherwise known in Newfoundland only at Chimney Cove. See p. 125.

P. nivea L. Typical *P. nivea* with the leaflets griseous-sericeous above: dry rocky and gravelly limestone barrens, Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 28,525; limestone cliffs and ledges on western slope, under summit, Bard Harbor Hill, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 28,526; dry white limestone bluff opposite western escarpment of Bard Harbor Hill, *Fernald & Long*, no. 28,533. Previously collected on Pointe Riche and on Cape St. George. See p. 117.

P. nivea, var. macrophylla Ser. The commoner American variety, with dark-green upper leaf-surfaces. Dominant on calcareous cliffs, slopes and barrens from Sacred Bay to St. John Bay. Previously collected on Table Mt., Port-à-Port Bay. See p. 125.

Potentilla **usticapensis,** n. sp., caudex crassus multiceps caudiculis brevibus caespitose congestis stipulis peliis emortuis dense vestitis; caulibus floriferis procumbentibus subscaposis 1–9 cm. longis 1–3-floris villoso-lanatis; foliis radicalibus breviter petiolatis 1–2.5 cm. longis uni- vel bijugis; stipulis infimis flavido-brunneis aliquando

purpurascentibus scariosis glabris breviter adnatis auriculis anguste ovatis; foliolis superioribus duobus inferioribus multo majoribus cuneato-obovatis profunde incisis, segmentis utrinque 2–3 linearioblongis obtusis margine revoluto subtus albis densissime villoso-lanatis vel tomentosis supra densissime villoso-lanatis vel glabrescentibus; calycibus villoso-lanatis 0.6–1 cm. latis 5–6 mm. longis, sepalis externis oblongis obtusis brevioribus quam internis anguste ovatis subacutis; petalis rotundato-obovatis apice truncatis vel emarginatis calyce vix longioribus ochroleucis; staminibus 20, filamentis vix 1 mm. longis, antheris subrotundatis 0.4 mm. longis; receptaculo breviter piloso; acheniis anguste ovoideis olivaceis 1.3–1.5 mm. longis numerosis, stylo subterminale 0.5–0.7 mm. longo basi papilloso-incrassato.—NEWFOUNDLAND: in gravel of dry limestone barrens, northern half of Burnt Cape, Pistolet Bay, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,518 (TYPE in Gray Herb.); dry gravel of limestone barrens, southern half of Burnt Cape, August 5, 1925, *Fernald & Long*, no. 28,519.

Very close to the arctic *P. pulchella* R. Br. and especially to var. *Sommerfeltii* (Lehm.) Th. Wolf (*P. Sommerfeltii* Lehm.). But those plants, which Wolf and the students of the floras of Spitzbergen and of Greenland merge as variants of one species, are characterisized by long straight lustrous sericeous pubescence of leaves, stems and calyx, the pubescence of *P. usticapensis* being opaque and densely villous-lanate. *P. pulchella*, furthermore, has the segments of the leaflets narrower and more acute than in *P. usticapensis;* its sepals (both inner and outer) less obtuse; its petals yellow rather than creamy and its style-bases more papillose. On Burnt Cape the new species was associated in the dry limestone gravel with a remarkable series of highly localized species, including *Festuca supina* Schur, *Poa alpina* var. *brevifolia* Gaudin, *Carex glacialis* Mackenzie, *Arenaria cylindrocarpa* Fern., *Lesquerella arctica* (Wormsk.) Wats., *Braya americana* (Hook.) Fern. and *Crepis nana* Richardson; while in more turfy or peaty spots were *Carex concinna* R. Br., *Habenaria straminea* Fern., *Astragalus alpinus* L. and *A. eucosmus* Robinson, *Oxytropis foliolosa* Hook., *Arctostaphylos rubra* (Rehder & Wilson) Fern., *Antennaria eucosma* Fernald & Wieg., *A. albicans* Fern., *A. spathulata* var. *continentis* Fern. & St. John, and local species of *Arnica* and *Taraxacum*. See p. 103.

POTENTILLA NORVEGICA L., var. **labradorica** (Lehm.), n. comb. *P. labradorica* Lehm., Ind. Sem. Hort. Bot. Hamb. 1849: 12 (1849). *P. monspeliensis*, var. *labradorica* (Lehm.) Fernald, RHODORA, x. 50 (1908). *P. norvegica*, var. *hirsuta*, forma *labradorica* (Lehm.) Wolf,

Mon. Gatt. Pot. 404 (1908).—A fairly marked geographic variety. In Newfoundland known only from turfy shore, Big Brook, *Fernald & Long*, no. 28,536.

P. norvegica and *P. monspeliensis* were published by Linnaeus on the same page. They were maintained as varieties of *P. norvegica* by Lehmann in 1856 and it was apparently not until 1898 that they were united (by Rydberg) under the name *P. monspeliensis*. By the International Rules the name *P. norvegica* must stand.

P. ALPESTRIS Hall. f. Dominant on peaty or turfy calcareous slopes and barrens from Sacred Bay to Ingornachoix Bay; also on Cape St. George (*Mackenzie & Griscom*). See pp. 91, 98, 118.

ALCHEMILLA VULGARIS L., var. VESTITA (Buser) Fernald & Wiegand. Wet quartzite rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,580, the second station in Newfoundland. See pp. 54, 124.

ASTRAGALUS **stragulus,** n. sp., depressus, caulibus filiformibus ramosissimis repentibus stragulos 3–4 dm. diametro formantibus; ramulis filiformibus adscendentibus 0.3–1.7 dm. longis glabris vel sparse strigosis; stipulis oblongo-lanceolatis vel ovatis 2–4 mm. longis; foliis petiolatis divergentibus, petiolis rhachibusque compresso filiformibus strigosis 2–6 cm. longis, foliolis 4–9-jugis ellipticis retusis 0.2–1 cm. longis 1–5 mm. latis glabris vel subtus strigosis; pedunculis filiformibus axillaribus 0.2–9 cm. longis glabris vel strigosis; floribus lilacinis patentibus 1–10, racemo sub anthesi congesto fructifero plus minusve laxo 1–4 cm. longo; bracteis subscariosis lanceolato-attenuatis nigro-strigosis pedicellum brevissimum superantibus; calycibus nigro-strigosis dentibus anguste deltoideis vel lanceolatis subulato-attenuatis brevioribus 1–2 mm. longis, tubo oblique campanulato 2.5–3 mm. longo; corollis 0.8–1.2 cm. longis; vexillo rotundato-obovato obcordato 0.8–1 cm. longo 7–8 mm. lato; alis cum ungue 4–5 mm. longis, lamina anguste obovata ungue duplo longiore superne 2.5 mm. lata basi auriculata, auricula oblonga obtusa 1 mm. longa; carinis 9–10 mm. longis lamina unguem aequante subacutis apice 2 mm. latis; ovario hirtello, legumine sessile vesicario oblongo-ovoideo nigro-strigoso 6–8 mm. longo 2.5–4 mm. diametro uniloculari apiculato, apiculo erecto; seminibus 5–8 inequilateralibus olivaceis vel brunneis 1.3–1.8 mm. longis.—NEWFOUNDLAND: sandy and turfy upper border of limestone beach, Cook Point, Pistolet Bay, July 18, 1925, *Fernald & Gilbert*, no. 28,583; August 13, 1925, *Fernald, Gilbert & Hotchkiss*, no. 28,584 (TYPE in Gray Herb.).

A beautiful species of the subgenus *Homalobus*, forming dense carpets and very attractive when in flower, the peduncles varying from only a few millimeters to nearly a decimeter in length, and bearing, when well developed, close racemes of lilac flowers. *A.*

stragulus is closely related to *A. yukonis* Jones, Revis. N. A. Astrag. 89 (1923), a species of similar habit from the Yukon. Jones's description is very contradictory, he stating in the key that *A. yukonis* has "Leaves sessile, very many. Leaflets 6–8 pairs," but in the detailed description "Leaves. . . all rather long-petioled . . . . Leaflets 3–5 pairs." Fortunately one of the numbers he cites, *Eastwood*, no. 626, is before me and this differs in many details from *A. stragulus*. Its leaflets are fewer, in Miss Eastwood's material ranging from 3–6 pairs, narrower, cinereous and only exceptionally retuse (in *A. stragulus* 4–9 pairs, retuse, and glabrous above); its peduncles are all elongate, 0.5–1 dm. long (in *A. stragulus* very variable, 0.2–9 cm. long); the racemes promptly becoming lax and remotely flowered (in *A. stragulus* only the lowest flowers becoming slightly remote in age); the flowers smaller and strongly ascending (the larger flowers of *A. stragulus* widely divergent); the standard only about 5 mm. long and with strongly revolute margins (the flat and broader standard of *A. stragulus* 0.8–1 cm. long); the keel much shorter but with a longer and obtuse erect tip; the pods said to be 2–3-seeded, the tip not strongly bent upward (in *A. stragulus* the 5–8-seeded pod with the point abruptly upturned and erect). See p. 106.

ASTRAGALUS ALPINUS L. Dry limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,585; turfy and rocky slopes, Quirpon Island, *Wiegand Gilbert & Hotchkiss*, no. 28,586, *Fernald & Long*, no. 28,587; previously known in Newfoundland only from Chimney Cove. See pp. 104, 121.

A. EUCOSMUS Robinson. Dominant on turfy slopes and barrens or on slate, trap or limestone talus and gravel from Quirpon Island to Boat Harbor. See p. 104. The corolla is normally deep-violet but it is, exceptionally, white in

A. EUCOSMUS, forma **albinus**, n. f., petalis lacteis.—NEWFOUNDLAND: springy meadow at base of Ha-Ha Mountain, Ha-Ha Bay, July 17, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,588 (TYPE in Gray Herb.).

In typical *A. eucosmus* the calyx is densely strigose with usually dark hairs, but on the banks of the Exploits River in east-central Newfoundland there occurs an extreme with glabrous calyx. This may be distinguished as

A. EUCOSMUS, var. **facinorum**, n. var., a forma typica recedit floribus remotis, calycibus glabris.—NEWFOUNDLAND: ledges and talus, north bank of Exploits River below the falls, Grand Falls, July 3,

1911, *Fernald, Wiegand, Bartram & Darlington*, no. 5795 (TYPE in Gray Herb.).

A. BLAKEI Eggleston. Limestone cliffs, ledges and talus, western escarpments of Bard Harbor Hill, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 28,597; *Fernald & Long*, no. 28,593; a species of northern New England new to Newfoundland. See p. 117.

OXYTROPIS FOLIOLOSA Hook. Dry gravelly limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,599; dry limestone gravel, Schooner (Brandy) Island, *Pease & Long*, no. 28,600; sandy and turfy upper border of limestone beach, Cook Point, *Fernald & Gilbert*, no. 28,601; the first from east of the Rocky Mts. See pp. 103, 105, 106.

O. CAMPESTRIS (L.) DC., var. JOHANNENSIS Fernald. Not previously recognized from Newfoundland, though already collected. The Newfoundland specimens are as follows. Dry crests of trap cliffs, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 28,604; shelves, crests and talus of diorite cliffs, Ha-Ha Mountain and Ha-Ha Point, *Pease & Griscom*, no. 28,602, *Fernald & Long*, no. 28,603; dry limestone cliffs and talus, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 28,605; conglomerate limestone and calcareous sandstone cliffs and ledges, Cow Head, *Fernald & Wiegand*, no. 3633; high sea-cliffs, Chimney Cove, *Waghorne*. See pp. 104, 125.

HEDYSARUM ALPINUM L. Dominant on turfy or peaty slopes or on calcareous cliffs and talus the length of the Straits from Quirpon Island to Savage Cove. See pp. 76, 104. Previously known from Cow Head and from the limestones of Port-à-Port and Cape St. George.

H. ALPINUM, var. AMERICANUM Michx. Calcareous cliffs and talus, western escarpments of Doctor Hill and Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 28,626, 28,627, the first from north of Bay of Islands. See p. 125.

LATHYRUS MARITIMUS (L.) Bigel., var. ALEUTICUS Greene. Gravelly and turfy strand near Isthmus Cove, Pistolet Bay, *Wiegand, Gilbert & Hotchkiss*, no. 28,631, the first from south of Labrador. See p. 120.

CALLITRICHE HETEROPHYLLA Pursh. Pools near the eastern end of the Straits, from Quirpon Island to Sacred Island, an extension north from the Exploits. See p. 120.

C. HERMAPHRODITICA L. (*C. autumnalis* L.). In dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 28,643, the first station north of the Humber. See p. 127.

NEMOPANTHUS MUCRONATA (L.) Trel. Local and scarce on slopes of the Highlands of St. John, our first stations north of Bay of Islands.

ACER SPICATUM Lam. Slopes of the Highlands of St. John, our first stations north of Bonne Bay.

VIOLA NEPHROPHYLLA Greene. Common in damp peaty soil, northward to the Straits. See p. 90.

V. SELKIRKII Pursh. Peaty slopes and woodland knolls, Quirpon Island and Highlands of St. John, extensions northward from Bay of Islands.

V. PALUSTRIS L. Swale at mouth of Eddies Cove Brook, *Fernald, Wiegand & Long*, no. 28,662, the first Newfoundland station. See p. 108.

V. RENIFOLIA Gray. Thickets bordering limestone barrens, southern half of Burnt Cape, *Fernald & Long*, nos. 28,666, 28,667, the first from Newfoundland, where var. BRAINERDII (Greene) Fern. is generally distributed along the West Coast. See p. 120.

EPILOBIUM ANGUSTIFOLIUM L., var. INTERMEDIUM (Wormsk.) Fern. Turfy clearings and pastures, Quirpon Island, *Fernald & Long*, no. 28,676; previously known in Newfoundland only from Grand Lake.

E. NESOPHILUM Fern. Mossy larch swamp on flat north of Doctor Hill, St. John Bay, *Fernald & Wiegand*, no. 28,684, northern extension from the Exploits Valley. See p. 127.

E. PYLAIEANUM Fern. RHODORA, xxvii. 33 (1925). Widely dispersed in southern Newfoundland. For citation of specimens see Fern., l. c. See p. 84.

E. PALUSTRE L., var. MANDJURICUM Hausskn. Springy swamp, Sandy Cove, Ingornachoix Bay, *Fernald, Long & Dunbar*, no. 26,860; glades and wet woods near base of Bard Harbor Hill and boggy limestone strand, Bard Harbor, St. John Bay, *Fernald & Long*, no. 28,696, *Wiegand & Gilbert*, no. 28,699; the first records from America. See p. 80.

E. PALUSTRE, var. LABRADORICUM Hausskn. Mossy barren hillside back of Cape Ray, *Fernald, Long & Dunbar*, no. 26,856; wet slaty cliffs, John Kanes's Ladder, western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 28,686*a*; previously known in Newfoundland only from tundra at Little River, *Mackenzie & Griscom*, no. 11,191.

E. PALUSTRE, var. LAPPONICUM Wahlenb. Dripping mossy quartzite cliffs and ledges, upper Deer Pond Brook, Highlands of St. John, *Fernald & Long*, nos. 28,697, 28,698; springy ditch bordering spruce thicket, Savage Cove, *Fernald & Long*, no. 28,701; new to Newfoundland. See p. 116.

E. WYOMINGENSE A. Nels. Swales, bogs and glades on limestones of the West Coast: Flower Cove, *Fernald, Long & Dunbar*, nos. 26,857. 26,859; Brig Bay, *Fernald, Long & Dunbar*, no. 26,858; Ingornachoix Bay, *Fernald & Wiegand*, no. 3728; Cow Head, *Fernald & Wiegand*, no. 3727; Cape St. George, *Mackenzie & Griscom*, no. 10,355; the first records from east of the Rocky Mts. See p. 60.

E. DAVURICUM Fisch. Peaty and turfy brooksides, borders of pools or damp depressions in limestone barrens, Quirpon Island to St. John Island: Quirpon Island, *Fernald & Long*, no. 28,708; Big Brook, *Pease & Griscom*, no. 28,703; Sandy (Poverty) Cove, *Fernald, Long &*

Gilbert, no. 28,706; Savage Cove, *Fernald, Pease & Long*, no. 28,704; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,707; the first from eastern America. See pp. 100, 118.

E. LEPTOCARPUM Hausskn., var. (?) MACOUNII Trel. Gravelly shore of pond in limestone rock-barrens near Rock Marsh, Flower Cove, *Fernald, Pease & Long*, no. 28,705; wet peat along trail in coniferous woods, lower southwestern slope of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,687; the first in eastern America. See p. 109.

E. BREVISTYLUM Barbey. Springy slopes and brooksides at head of Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,720; springy ditch bordering spruce thicket, Savage Cove, *Fernald & Long*, no. 28,713; the first in eastern America. See p. 123.

E. BOREALE Hausskn. Springy ditch bordering spruce thicket, Savage Cove, *Fernald & Long*, no. 28,712; glades and rich thickets, slopes of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 28,719, 28,722, 28,723; bushy swale on flat north of Doctor Hill, St. John Bay, *Fernald & Wiegand*, no. 28,721. Except for stations in the Shickshock Mts. these are the first in eastern America. See p. 117.

E. DRUMMONDII Hausskn. Turfy slope near mouth of Big Brook, *Fernald & Long*, no. 28,725; mossy glades and banks, Eddies Cove *Fernald, Wiegand & Long*, no. 28,726; springy mossy bank, Savage Cove, *Fernald, Long & Gilbert*, no. 28,727. A Rocky Mountain species heretofore known in the East only from the Torngat Mts. of Labrador and Tabletop Mts., Gaspé. See pp. 99, 108.

EPILOBIUM **scalare**, n. sp., perenne, rhizomate elongato obliquo crassiusculo, ad collum gemmas bulbiformes sessiles hypogaeas obovoideas 5–10 mm. longas edente; caule e basi arcuata erecto 0.5–3.5 dm. alto crasso simplici vel plerumque in parte media superiore ramoso, ramis perbrevibus arcte adscendentibus fastigiatis, glabro subdense foliato multifloro, lineis 2 elevatis pilosiusculis e marginibus foliorum decurrentibus notato; foliis inferioribus oppositis reliquis alternatis subapproximatis pallide viridibus subcarnosis utrinque glaberrimis patentibus vel reflexis ellipticis vel anguste oblongo-ovatis breviter petiolatis basi rotundatis vel angustatis apicem versus angustatis subacutis mediis 3–6 cm. longis 1.2–2.5 cm. latis margine denticulis minimis callosis vix repandis munitis; alabastris anguste ovoideis subacutis basi sparse pilosis; floribus erectis 5–6 mm. longis; calycis laciniis ovato-lanceolatis acutiusculis tubo crispo-piloso; petalis purpureis calyce $\frac{1}{3}$ longioribus; stigmate clavato; capsulis junioribus crispo-pilosis glabratis deinde 4–6 cm. longis pallide viridibus, pedicellis brevissimis 2–3 mm. longis; seminibus anguste ovoideo-oblongis apice pellucido-appendiculatis basin versus sensim attenuatis acutis 1.4 mm. longis, 0.4 mm. latis, testa tenuiter denseque papillosa.—NEWFOUNDLAND: wet slaty cliffs, John Kanes's Ladder, western face

of Doctor Hill, Highlands of St. John, August 24, 1925, *Fernald & Long*, no. 28,728 (TYPE in Gray Herb.).

Nearest related to *E. saximontanum* Hausskn. of the cordilleran region of northwestern America. That, however, as described by Haussknecht, has a slender rhizome (in *E. scalare* rather thick and stout); simple stem "a span" high (in *E. scalare* fastigiate or bushy-branched and taller); remote leaves only 2–3 cm. long and at most 1 cm. wide (in *E. scalare* 3–6 cm. long, 1.2–2.5 cm. wide); the buds and calices glabrous (in *E. scalare* crisp-pilose), the petals pale (in *E. scalare* purple); and the young capsules glabrous (in *E. scalare* crisp-pilose). The seeds of *E. scalare* are apparently very similar to those of *E. saximontanum*. The latter species is not well represented in American herbaria, and I have been forced to interpret it merely from Haussknecht's description.

Epilobium scalare may eventually prove to be identical with *E. saximontanum* or some species of northwestern America; but I have been unable to place it satisfactorily with any of them. The flora of western Newfoundland is rich in *Epilobium*—seventeen species and ten varieties thus far known—and these include besides the circumpolar species such western American types as *E. wyomingense* A. Nelson, *E. boreale* Hausskn., *E. brevistylum* Barbey, *E. Drummondii* Hausskn., *E. leptocarpum* var. *Macounii* Trel., and *E. Behringianum* Hausskn. See p. 126.

E. LACTIFLORUM Hausskn. Brooksides on slaty hills back of Little Quirpon, *Fernald & Gilbert*, no. 28,730; mossy brooksides, Sacred Island, *Fernald & Long*, no. 28,731; cold wet chimneys in trap cliffs, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long*, no. 28,732; wet quartzite rocks and seepy banks along upper Deer Pond Brook and in Southwest Gulch, Highlands of St. John, *Fernald & Long*, no. 28,739, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,733; new to Newfoundland. See pp. 117, 122.

E. BEHRINGIANUM Hausskn. Springy mossy bank, Savage Cove, *Fernald, Long & Gilbert*, no. 28,734; a species of northeastern Asia and adjacent Alaska, here found for the first time in eastern America. See p. 109.

E. ALPINUM L. (*E. anagallidifolium* Lam.). Glades and damp thickets, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,736, new to Newfoundland. See p. 103.

MYRIOPHYLLUM ALTERNIFLORUM DC. Frequent from Brig Bay to Savage Cove, an extension northward from Bay of Islands. See p. 127.

M. EXALBESCENS Fern. Common from Brig Bay to Pistolet Bay, an extension north from Pointe Riche. See p. 127.

SANICULA MARILANDICA L., var. **borealis,** n. var. a var. typica recedit floribus stamineis majoribus sepalis 1.3–2 mm. longis pedicellis crassis subereo-angulatis vel -clavatis; fructu 6–8 mm. longo.—Newfoundland to northern New York. NEWFOUNDLAND: spruce thickets, Boat Harbor, Straits of Belle Isle, July 19, 1925, *Fernald, Wiegand & Long*, no. 28,765; meadow below limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, August 27, 1925, *Fernald & Long*, no. 28,766; damp talus of limestone sea-cliffs, Pointe Riche, August 4, 1910, *Fernald & Wiegand*, no. 3765; wet runs and boggy spots, Ingornachoix Bay, August 2, 1910, *Fernald & Wiegand*, no. 3764; marsh at base of Gros Morne, Bonne Bay, August 13 and 14, 1919, *R. H. Kimball*, no. 74; park-like openings in woods, Birchy Cove (Curling), July 21, 1910, *Fernald & Wiegand*, no. 3763; woods, Wild Cove, July 16, 1896, *Waghorne;* banks of Exploits River near Badger Brook, August 13, 1894, *B. L. Robinson;* ledges and talus, Grand Falls, July 22, 1911, *Fernald, Wiegand, Bartram & Darlington*, no. 5950; shaded bank of Salmon River, Glenwood, July 12, 1911, *Fernald, Wiegand & Darlington*, no. 5951; damp bushy ravine in limestone tableland, Table Mountain, Port-à-Port Bay, August 16, 1910, *Fernald & Wiegand*, no. 3766. QUEBEC: alluvial woods, St. John (or Douglastown) River, August 23, 1904, *Collins, Fernald & Pease;* alluvial thickets and woods near mouth of Dartmouth River, August 26 and 27, 1904, *Collins, Fernald & Pease* (TYPE in Gray Herb.); dans la prairie au sommet des falaises du Gros-Ruisseau, Rivière-aux-Rénards, Juil. 14, 1923, *Victorin et al*, no. 17,318; coniferous forest, "Low's Trail" from River Ste. Anne des Monts to Table-Topped Mt., August 14, 1906, *Fernald & Collins*, no. 678; alluvium of Bonaventure River, August 4–8, 1904, *Collins, Fernald & Pease;* alluvial thickets, Little Cascapedia River, July 29 and 30, 1904, *Collins, Fernald & Pease;* Matane River, August 5, 1904, *F. F. Forbes;* Little Métis, August 16, 1906, *Fowler;* shore of Lake Temiscouata, August, 1914, *Victorin*, no. 518; Lower Caché River, Lac Tremblant, August 2, 1922, *Churchill.* PRINCE EDWARD ISLAND: swampy woods, Tignish, August 6, 1912, *Fernald, Long & St. John*, no. 7852. NEW BRUNSWICK: cliffs, St. John River, Connors, July 13, 1903, *Pease*, no. 2260; Little Island, Shediac Bay, August 5, 1914, *Hubbard.* MAINE: Fort Fairfield, July 16, 1902, *Williams, Collins & Fernald.* NEW YORK: Canton, July 17, 1914, *Phelps*, no. 726.

In typical *Sanicula marilandica* of the eastern United States and the southern edges of Canada the staminate flowers are smaller, with sepals 1–1.5 mm. long, the pedicels filiform and usually more elongate than in the northern extreme, and the fruits average slightly shorter, varying from 5–7 mm. in length. Var. *borealis* usually has a tendency

to firmer or somewhat fleshy or leathery leaves; but in none of the characters is it absolutely separable. In northern New England some of the plants are transitional, but all the material from farther north, in Gaspé and Newfoundland, seems fairly constant in its thickened pedicels and larger calyx and, when mature, in its usually larger fruit.

Osmorhiza divaricata Nutt. Alluvial woods north of Doctor Hill, St. John Bay, *Fernald & Long*, no. 28,771, new to Newfoundland. See p. 125.

Cicuta bulbifera L. Locally in swales along the Straits from Flower Cove to Boat Harbor, an extension north from Bay of Islands.

Heracleum Sphondylium L. A dominant weed of fields and fencerows, Trepassey, *Fernald, Long & Dunbar*, no. 26,886. See p. 84.

Conioselinum Gmelini (Bray) Steud. Nom. ed. 2, i. 403 (1840). *Selinum Gmelini* Bray, Denkschr. Bot. Ges. Regensb. i. pt. 2: 36 (1818).

Certain collections from Newfoundland and the Gaspé Peninsula, with the upper stipules gradually narrowed from base to summit, rather than broadly dilated as in *C. chinense* (L.) BSP., and with the leaves very finely dissected, seems to be quite inseparable from the plant of arctic Eurasia which there regularly passes as *C. Gmelini* (see p. 117). *C. Gmelini* (Bray) Steud. is quite distinct from the plant of western North America which was christened *C. Gmelini* (C. & S.) Coult. & Rose, Cont. U. S. Nat. Herb. vii. 150 (1900), based upon *Ligusticum Gmelini* Cham. & Schl. Linnaea, i. 391 (1826). In view of Steudel's combination, properly made in a well-known work and clearly listed in *Index Kewensis*, there was no call for the later combination. The plant of western America, which has larger fruits and much longer and coarser involucels than *C. Gmelini* (Bray) Steud., should be called

Conioselinum **Benthami** (Wats.), n. comb. *Selinum Benthami* Wats. Bibl. Ind. 432 (1878). *Ligusticum Gmelini* Cham. & Schl. Linnaea, i. 391 (1826). *C. Gmelini* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 150 (1900), not Steud. (1840).

The specific characters in *Conioselinum* are not well worked out but everyone who has watched the genus in the region of Gaspé and Newfoundland realizes that with us it is a complex group. In this region there seem to be at least four species: *C. chinense* (L.) BSP., *C. Gmelini* (Bray) Steud., *C. pumilum* Rose, and a fourth species (known from a single collection from Tabletop Mts., Gaspé) with

coarse and elongate involucels, near to if not identical with *C. Benthami* (Wats.) Fern. of Alaska; but until more time can be given to study of their technical characters it is wisest to defer the presentation of a formal key to them.

ANGELICA **laurentiana**, n. sp., *A. atropurpureae* similis; caulibus 1–2 m. altis viridibus vix purpurascentibus glabris; segmentis terminalibus foliorum imorum valde confluentibus; umbellis hemisphericis primariis 1.3–2.5 dm. latis radiis 28–45 subrigidis crassis dense griseo-puberulis floribus exclusis 5–10 cm. longis; involucellis nullis vel bracteis lineari-setaceis vel lineari-oblanceolatis pedicellos subaequantibus vel superantibus; pedicellis maturis 0.6–1.4 cm. longis griseo-puberulis: fructu late oblongo vel oblongo-suborbiculato basi apiceque rotundato 5.5–10.5 mm. longo glabro; jugis tribus dorsalibus alatis, alis dorsalibus laterales subaequantibus.—Northwestern Newfoundland and eastern Saguenay County, Quebec. NEWFOUNDLAND: trap cliffs and talus, Anse aux Sauvages, Pistolet Bay, August 11, 1925, *Fernald, Wiegand & Long*, nos. 28,784 (TYPE in Gray Herb.), 28,785; rocky meadows and brook-bottoms, upper Deer Pond Brook, Highlands of St. John, July 28, 1925, August 20, 1925, *Fernald & Long*, nos. 28,782, 28,783. QUEBEC: meadow, Tabatière, Boishébert, August 14, 1915, *St. John*, no. 90,626 (distributed as *Coelopleurum actaeifolium*).

Angelica laurentiana is at once distinguished in mature fruit from *A. atropurpurea* L. by the thin wings of the dorsal ridges, the dorsal ridges in *A. atropurpurea* being low, blunt-edged and wingless. In *A. atropurpurea* the ripe fruit is 5.5–7.5 mm. long, in *A. laurentiana* it may be as short but is commonly 8–10.5 mm. long. In *A. atropurpurea* the stem is usually suffused with purple and the umbels are inclined to be spherical, with the outer rays strongly reflexed, and the upper segments of the lowest leaves are commonly distinct or only slightly confluent. In *A. laurentiana* the stem may be purplish but it is more commonly green; the rays of the umbel ascend or are at most horizontally divergent and the upper segments of the lowest leaves are strongly confluent. In *A. atropurpurea* the involucels, when present, are commonly much shorter than the pedicels; in *A. laurentiana* they are often nearly as long as or even longer than the pedicels.

In its fruit *A. laurentiana* is nearer to *A. ampla* A. Nelson of the Rocky Mountain region of Wyoming and Colorado; but the latter has the fruits smaller and with lower scarcely winged dorsal ridges. In their key Coulter & Rose[1] define *A. atropurpurea* as having "In-

[1] Contrib. U. S. Nat. Herb. vii. 154 (1900).

florescence glabrous" and in their detailed description states that the umbel is "15 to 25-rayed." Such an account is difficult to reconcile with the plants, for every specimen of *A. atropurpurea* in the Gray Herbarium and the herbarium of the New England Botanical Club has the rays and pedicels copiously puberulent and the primary or leading umbels all have 22–46 rays.[1] See p. 117.

PYROLA SECUNDA L., forma **eucycla**, n. f., a f. typica recedit foliis rotudatis vel rotundo-ellipticis.—NEWFOUNDLAND: mossy spruce woods north of Doctor Hill, St. John Bay, August 24, 1925, *Fernald & Long*, no. 28,801.

Forma *eucycla* is an extreme form of *P. secunda*, var. *vulgaris* Herder, and should not be confused with var. *obtusata* Turcz. Typical *P. secunda* has the bracts at the base of the stem lanceolate, strongly involute and firm; the firm leaf-blades dark-green and rather lustrous, crenate-serrate, 1.5–6 cm. long; the scapes 1–2 dm. high; racemes 6–20-flowered, in anthesis 2–5, in fruit up to 8.5 cm. long; the petals greenish-yellow; the mature style 5–9 mm. long. The usually very distinct var. *obtusata* differs in having the basal bracts oblong to ovate, but slightly involute, membranaceous; the leaf-blades membranaceous, pale-green, hardly lustrous, crenate, 0.8–3 cm. long; the scapes 0.5–1.5 dm. high; the racemes 2–10-flowered, in anthesis 0.5–3, in fruit up to 4 cm. long; petals creamy-white; mature style 4–6 mm. long.

In all its technical points forma *eucycla* belongs with typical *P. secunda*, which, however, has the leaves narrowed at tip.

RHODODENDRON CANADENSE (L.) BSP. Shrubby barren near the Yellow Marsh back of Bard Harbor, St. John Bay, *Gilbert & Hotchkiss*, no. 28,824, an extension north from Bay of Islands.

PHYLLODOCE CAERULEA (L.) Bab. Abundant on peaty and turfy quartzite, upper slopes of Bard Harbor Hill, Highlands of St. John, the third Newfoundland station. See p. 116.

CASSIOPE HYPNOIDES (L.) D. Don. Turfy and mossy quartzite rocks along Mans Humbug Brook, Highlands of St. John, very scarce, *Fernald & Long*, no. 28,839, the second Newfoundland station. See p. 124, where I spoke of it as new to Newfoundland, overlooking Eames & Godfrey's discovery of it on Blomidon.

ARCTOSTAPHYLOS RUBRA (Rehder & Wilson) Fernald. Turfy or peaty limestone barrens along the Straits: Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,853,

[1] The first station cited by Coulter & Rose is likewise difficult to reconcile with geographic fact: "VERMONT: Alpine region of the White Mountains, *Oakes*."

Fernald & Long, no. 28,855; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 28,854, *Wiegand & Long*, no. 28,856; Big Brook, *Fernald & Long*, no. 28,852; Yankee Point, *Fernald, Wiegand & Long*, no. 28,857; new to Newfoundland. See p. 99.

VACCINIUM NUBIGENUM Fernald. Dry scrub at margin of quartzite barren near summit of Bard Harbor Hill and heathy banks near upper Deer Pond Brook, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,872, *Fernald & Long*, nos. 28,873, 28,874; previously known only from the Shickshock Mts. See pp. 116, 124.

V. OVALIFOLIUM Sm. Open spruce thickets, Boat Harbor, *Fernald, Wiegand & Long*, no. 28,875; abundant in the thickets and gulches of the Highlands of St. John. See pp. 107, 116, 124. Previously known on the North Peninsula only from Croque (*Banks, LaPylaie*).

STATICE LABRADORICA (Wallr.) Hubb. & Blake, var. SUBMUTICA Blake. Dominant on limestone barrens from Pistolet Bay to St. John Bay; previously known on the West Coast south to Lewis Hills.

PRIMULA FARINOSA L. Fairly typical *P. farinosa* is represented by specimens from crests of trap cliffs, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 28,908; turfy and peaty pockets in limestone ledges, Sandy (Poverty) Cove, *Fernald, Long & Dunbar*, no. 26,955; Flower Cove, *M. E. Priest*, no. H1. See pp. 60, 75.

P. FARINOSA, var. AMERICANA Torr. Wet limestone ledges and gravel near the sea, St. Barbe, *Fernald, Long & Dunbar*, no. 26,956.

P. FARINOSA, var. INCANA (M. E. Jones) Fern. Turfy limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*. no. 28,905; gravelly limestone shore, Schooner (Brandy) Island, *Pease & Long*, no. 28,907; limestone barrens, Yankee Point, *Wiegand, & Hotchkiss* no. 28,904; turfy limestone barrens, Dog Peninsula, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,913.

P. FARINOSA, var. MACROPODA Fern. Abundant on the West Coast

P. SIBIRICA Jacq., var. ARCTICA Pax. Gravelly and peaty limestone barrens back of Big Brook, *Fernald & Long*, no. 28,915; sandy and gravelly margin of Big Brook, *Fernald, Wiegand, Long & Gilbert*, no. 28,916; swale near mouth of brook, Watts Bight, *Pease, Griscom, Gilbert & Hotchkiss*, no. 28,901; wet banks, turfy limestone barrens, Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 28,918; wet hollows and pond-shores in limestone gravel-barrens, Cook Point, *Fernald & Gilbert*, no. 28,917, *Fernald, Gilbert & Hotchkiss*, no. 28,919; the first records from eastern America. See pp. 98, 99, 105.

P. EGALIKSENSIS Wormsk. Abundant in swales or on peat in the calcareous region from Sacred Island to St. John's Island. See pp. 54, 60, 75, 118.

GENTIANA PROPINQUA Richardson. Dominant on turfy and

gravelly limestone shores and cliffs from Quirpon Island to Ingornachoix Bay. See pp. 54, 60, 79, 80.

Lamium purpureum L. Completely occupying a garden-site at head of Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,958, new to Newfoundland.

LIMOSELLA AQUATICA L. Shallow fresh pool back of beach, Harbour Breton, *Fernald, Long & Dunbar*, no. 27,013. Otherwise known in eastern America only from the southeastern corner of the Labrador Peninsula. See p. 87.

GRATIOLA AUREA Muhl. Gravelly margin of Junction Pond, Whitbourne, *Fernald, Long & Dunbar*, no. 27,014; discovered at the same station in 1911, *Fernald & Wiegand*, no. 6143; the only station known in Newfoundland. See p. 86. The material collected on August 8, 1911, and August 25, 1924, is very dwarf and shows no sign of flowering.

(*To be continued*)

LICHENS OF THE GASPÉ PENINSULA, QUEBEC.

CARROLL W. DODGE.

(*Continued from p. 207.*)

* CLADONIA FOLIACEA (Huds.) Willd. var. ALCICORNIS (Lightf.) Schaer. Cap Rosier, *Macoun.*

C. APODOCARPA Robbins. Big Chimney, Mt. Mattaouisse, *Dodge 2842*, Logan range.

C. BOTRYTES (Hagen) Willd. Big Chimney, Mt. Mattaouisse, *Dodge 2843*, Logan range.

C. BACILLIFORMIS (Nyl.) Vainio. Matane, *Dodge 2841.*

C. CYANIPES (Sommerf.) Vainio var. DESPREAUXII (Bor.) Th. Fr. Big Chimney, Mt. Mattaouisse, *Dodge 2844*, Logan range.

STEREOCAULON TOMENTOSUM Fr. R. Cap Chat, *Dodge 2150;* Fernald Basin, *Dodge 2159;* gorge, northeast branch of R. Ste. Annes des Monts, *Dodge 2160;* R. Ste. Anne des Monts, *Collins 4657;* Mt. Albert, *Collins 4177;* Cap Rosier, *Macoun.*

S. DENUDATUM Floerke. Lac Perré, *Dodge 2689*, Tabletop range; between Lac Mont Louis and north branch of R. Madeleine, *Dodge 2634;* Mt. Albert, *Macoun.*

* S. CONDENSATUM Hoffm. Fink list.

S. PASCHALE (L.) Ach. Mt. Albert, *Collins 4063.*

GYROPHORACEAE

Gyrophora proboscidea (L.) Ach. *Umbilicaria proboscidea* (L.) DC. Gaspé coast, *Macoun;* * Mt. Albert, *Macoun;* Mt. Dunraven, *Dodge 2861*, Tabletop range.

G. arctica Ach. *Umbilicaria proboscidea* (L.) DC. var. *arctica* (Ach.) Tuck. Mt. Dunraven, *Dodge 2862*, Tabletop range.

G. hyperborea Ach. *Umbilicaria hyperborea* (Ach.) Hoffm. Gorge, northeast branch of R. Ste. Anne des Monts, *Dodge 2616.*

G. erosa (Web.) Ach. *Umbilicaria erosa* (Web.) Hoffm. Mt. Dunraven, *Dodge 2859*, Tabletop range; * Mt. Albert, *Macoun.*

G. vellea (L.) Ach. *Umbilicaria vellea* (L.) Nyl. Gorge, northeast branch of R. Ste. Anne des Monts, *Dodge 2300*, Tabletop range.

G. polyphylla (L.) Hook. *Umbilicaria polyphylla* (L.) Schrad. Mt. Dunraven, *Dodge 2860*, Tabletop range.

ACAROSPORACEAE

* Biatorella privigna (Ach.) A. L. Smith. *Lecanora privigna* (Ach.) Nyl. R. Ste. Anne des Monts, *Macoun.*

COLLEMACEAE

* Collema rupestris (Sw.) Rabenh. *C. flaccidum* Ach. *Synechoblastus rupestris* (Sw.) Trev. Gaspé Basin and R. Ste. Anne des Monts, *Macoun.*

* C. nigrescens (Huds.) Ach. *Synechoblastus nigrescens* (Huds.) Anzi. R. Ste. Anne des Monts, *Macoun.*

* C. pulposum (Bernh.) Ach. R. Ste. Anne des Monts, *Macoun.*

Leptogium plicatile (Ach.) Leighton. *C. plicatile* Ach. (sensu Tuck.) Gaspé coast, *Macoun 29, 31.*

* L. lichenoides (L.) Zahlbr. *L. laceruum* (Raeuschel) S. F. Gray. R. Ste. Anne des Monts, *Macoun.*

L. tremelloides (L. f.) S. F. Gray. Gaspé, *Macoun 106;* * R. Ste Anne des Monts, *Macoun.*

PANNARIACEAE

Psoroma hypnorum (Dicks.) S. F. Gray. *Squamaria hypnorum* (Dicks.) Hook. *Pannaria hypnorum* (Dicks.) Koerb. Big Chimney, Mt. Mattaouisse, *Dodge 2848*, Logan range.

Pannaria rubiginosa (Thunb.) Delise. Gaspé coast, *Macoun 22;* * R. Ste. Anne des Monts, *Macoun.*

* P. LEUCOSTICTA Tuck. R. Ste. Anne des Monts, *Macoun.*

P. PEZIZOIDES (Web.) Trev. *P. brunnea* (Sw.) Massal. Gaspé coast, *Macoun 20, 21;* * R. Ste. Anne des Monts, *Macoun.*

* PLACYNTHIUM NIGRUM (Huds.) S. F. Gray. *Pannaria nigra* (Huds.) Nyl. R. Ste. Anne des Monts, *Macoun.*

* PARMELIELLA CORALLINIOIDES (Hoffm.) Zahlbr. *Pannaria trypto-phylla* (Ach.) Massal. Gaspé county, *Macoun.*

? P. MICROPHYLLA (Sw.) Müll.-Arg. *Pannaria microphylla* (Sw.) Massal. Gaspé coast, *Macoun 48.*

STICTACEAE

LOBARIA (RICASOLIA) LACINIATA (Huds.) Vainio. *Sticta amplissima* (Scop.) Massal. R. Cap Chat, *Dodge 2151;* * R. Ste. Anne des Monts, *Macoun.*

L. (RICASOLIA) PULMONARIA (L.) Hoffm. *Sticta pulmonaria* (L.) Ach. R. Cap Chat, *Dodge 2149;* R. Ste. Anne des Monts, * *Macoun, Collins 4645t.*

* L. (LOBARINA) SCROBICULATA (Scop.) DC. *Sticta scrobiculata* (Scop.) Ach. R. Ste. Anne des Monts, *Macoun.*

* STICTA (STICTINA) CROCATA (L.) Ach. Gaspé coast, *Macoun.*

PELTIGERACEAE

SOLORINA CROCEA (L.) Ach. Mt. McNab, *Dodge 2295, 2690;* Mt. Dunraven, *Dodge 2294,* Tabletop range.

S. SACCATA (L.) Ach. R. Ste. Anne des Monts, *Dodge 2298;* Lac Pleureuse, *Dodge 2299.*

S. SPONGIOSA (Sm.) Carroll. *S. saccata* (L.) Ach. var. *spongiosa* (Sm.) Nyl. Gaspé coast, *Macoun 85.*

NEPHROMA (EUNEPHROMA) ARCTICUM (L.) Fr. summit Mt. Albert, *Macoun, Collins 4177f;* Mt. Mattaouisse and Mt. Collins, *Dodge 2296,* Logan range; gorge, northeast branch R. Ste. Anne des Monts, *Dodge 2297,* Tabletop range.

N. (NEPHROMIUM) LAEVIGATUM Ach. Lac Perré, *Dodge 2632;* gorge, northeast branch, R. Ste. Anne des Monts, *Dodge 2187,* Tabletop range; * Cap Rosier, *Macoun.*

N. (NEPHROMIUM) HELVETICUM Ach. R. Ste. Anne des Monts, *Macoun.*

PELTIGERA HORIZONTALIS (L.) Hoffm. Méchins–R. Cap Chat trail, *Dodge 2309;* island in Lac Perré, *Dodge 2154,* Tabletop range; * R. Ste. Anne des Monts, *Macoun.*

* P. POLYDACTYLA (Neck.) Hoffm. Gaspé county, *Macoun.*
* P. VENOSA (L.) Hoffm. R. Ste. Anne des Monts, *Macoun.*
P. APHTHOSA (L.) Willd. R. Cap Chat, *Dodge 2146, 2148, 2308;* Big Chimney, Mt. Mattaouisse, *Dodge 2768,* Logan range; * Gaspé coast, *Macoun;* R. Ste. Anne des Monts, *Collins 4645p, 4645u.*
P. MALACEA (Ach.) Fr. Tabletop range, *Collins 4400b.*
P. CANINA (L.) Hoffm. var. SPONGIOSA Tuck. Gorge, northeast branch R. Ste. Anne des Monts, *Dodge 2153.*

PERTUSARIACEAE

PERTUSARIA MULTIPUNCTA (Turn.) Nyl. * R. Ste. Anne des Monts, *Macoun;* between Mont Louis and Lac Mont Louis, *Dodge 2180.*
P. VELATA (Turn.) Nyl. Gaspé, *Macoun 128.*
* P. COMMUNIS DC. R. Madeleine, *Macoun.*
P. LEIOPLACA (Ach.) Schaer. R. Cap Chat, *Dodge 2877;* * R. Ste. Anne des Monts, *Macoun.*
P. PUSTULATA (Ach.) Nyl. R. Cap Chat, *Dodge 2878;* * Gaspé coast, *Macoun.*
P. GLOMERATA (Ach.) Schaer. Mt. Albert, *Macoun 139.*
P. GLOBULARIS Ach. between Mt. Mattaouisse and Mt. Collins, *Dodge 2875,* Logan range; Mt. Dunraven, *Dodge 2876,* Tabletop range.

LECANORACEAE

* LECANORA MURALIS (Schreb.) Schaer. var. SAXICOLA (Poll.) Schaer. R. Ste. Anne des Monts, *Macoun.*
L. FRUSTULOSA (Dicks.) Ach. Capucins, *Collins 4690c.*
* L. SORDIDA (Pers.) Th. Fr. Mt. Albert, *Macoun.*
L. HAGENI Ach. Mt. Fortin, *Dodge 2801,* Logan range; Ste. Anne des Monts, *Dodge 2874;* * R. Madeleine, *Macoun.*
L. SUBFUSCA (L.) Ach. Matane, *Dodge 2888.*
L. TARTAREA (L.) Ach. Mt. Albert, *Macoun.*
* L. PALLESCENS (L.) Schaer. Mt. Albert, *Macoun.*
L. CINEREA (L.) Sommerf. Gannett ledge, Bonaventure Island, *Collins 5263.*
* L. DUBITANS (Nyl.) A. L. Smith. *L. dimera* (Nyl.) Th. Fr. Fink list.
L. POLYTROPA (Ach.) Schaer. *L. varia* (Hoffm.) Ach. var. *polytropa* Nyl. between Mt. Logan and Mt. Pembroke, *Dodge 2847;* Capucins, *Collins 4688a.*

L. INTRICATA (Schrad.) Ach. *L. varia* (Hoffm.) Ach. var. *intricata* (Schrad.) Nyl. Mt. Albert, *Dodge 2872*.

L. SYMMICTA Ach. *L. varia* (Hoffm.) Ach. var. *symmicta* Ach. Gaspé, *Macoun 120;* Gaspé coast, *Macoun 171, 174*.

ICAMADOPHILUS ERICETORUM (L.) Zahlbr. *Baeomyces aeruginosus* (Scop.) DC. Fernald Basin, *Dodge 2290, 2293*, Logan range; Mt. Albert, *Dodge 2870;* gorge, northeast branch, R. Ste. Anne des Monts, *Dodge 2711*, Tabletop range.

HAEMATOMMA VENTOSUM (L.) Massal. *Lecanora ventosa* (L.) Ach. Mt. Mattaouisse, *Dodge 2858*, Logan range; * Mt. Albert, *Macoun*.

H. ELATINUM (Ach.) Koerb. *Lecanora elatina* Ach. Gaspé coast, *Macoun;* * R. Ste. Anne des Monts, Macoun. Var. **ochrophaea** (Tuck.) Dodge, n. comb. *Lecanora elatina* Ach. var. *ochrophaea* Tuck. Syn. N. Am. Lichens **1**: 195. 1882. *Biatora ochrophaea* Tuck. Syn. Lich. N. E. 61–62. 1848. R. Ste. Anne des Monts, *Macoun*.

PARMELIACEAE

PARMELIA PERLATA (Huds.) Ach. R. Ste. Anne des Monts, *Dodge 2631*.

* P. TILIACEA (Hoffm.) Ach. R. Ste. Anne des Monts, *Macoun*.

P. SAXATILIS (L.) Ach. between north fork of R. Madeleine and Lac Mont. Louis, *Dodge 2657;* R. Ste. Anne des Monts, *Macoun*. Var. LAEVIS Nyl. between Mt. Mattaouisse and Mt. Collins, *Dodge 2166*, Logan range; R. Cap Chat, *Dodge 2865*. Var. FURFURACEA Mudd. gorge, northeast branch R. Ste. Anne des Monts, *Dodge 2883*.

* P. SULCATA Tayl. *P. saxatilis* (L.) Ach. var. *sulcata* (Tayl.) Nyl. Gaspé coast, *Macoun*.

P. PHYSODES (L.) Ach. near Lac Perré, *Dodge 2849*, Tabletop range; R. Cap Chat, *Dodge 2863;* R. Ste. Anne des Monts, *Collins 4645o;* Matane, *Dodge 2131, 2132*. * Var. OBSCURATA (L.) Ach. Fink list.

* P. OLIVACEA (L.) Ach. Ste. Anne des Monts, *Macoun*.

* P. CONSPERSA (Ehrh.) Ach. R. Ste. Anne des Monts, *Macoun*.

P. CENTRIFUGA (L.) Ach. Mt. Dunraven, *Dodge 2864*, Tabletop range.

CETRARIA ISLANDICA (L.) Ach. Mt. Mattaouisse, *Dodge 2161*. Var. TENUIFOLIA (Retz) Vainio (var. *crispa* Ach.). Mt. Albert, *Dodge 2626; Collins 4123, 4156b, 4177o, 4177p*. (The latter agrees best with *C. fastigiata* Delise from Newfoundland in Tuckerman Herb. This group needs revision.) Between Mt. Mattaouisse and Mt. Collins, *Dodge 2224*, Logan range.

C. JUNIPERINA (L.) Ach. var. TERRESTRIS Schaer. Gaspé coast, *Macoun;* * summit, Mt. Albert, *Macoun.*

C. PINASTRI (Ach.) S. F. Gray. *C. juniperina* (L.) Ach. var. *pinastri* Ach. Lac Perré, *Dodge 2176;* between Mont Louis and Lac Mont Louis, *Dodge 2175.*

C. SAEPINCOLA (Ehrh.) Ach. Lac Perré, *Dodge 2177;* gorge, northeast branch, R. Ste. Anne des Monts, *Dodge 2633,* Tabletop range. This material agrees well with other alpine material determined as this species but not with more southern or lowland material.

C. NIVALIS (L.) Ach. Mt. Albert, *Collins 4177h, 4179b;* Allen's Ravine, Mt. Albert, *Collins 4156a.*

* C. CILIARIS (Ach.) Tuck. Ste. Anne des Monts, *Macoun.*

C. FAHLUNENSIS (L.) Schaer. Le Viellard au Sud, *Dodge 2667;* Mt. Dunraven, *Dodge 2873,* Tabletop range; * summit Mt. Albert, *Macoun.*

* C. CUCULATA (Bell.) Ach. summit Mt. Albert, *Macoun.*

C. GLAUCA (L.) Ach. Gaspé coast, *Macoun;* Lac Perré, *Dodge 2850,* Tabletop range; * Ste. Anne des Monts, *Macoun.*

* C. HIASCENS (Fr.) Th. Fr. summit Mt. Albert, *Macoun.*

USNEACEAE

RAMALINA POLLINARIELLA Nyl. *R. pusilla* (Prev.) Tuck. var. *geniculata* (Hook. f. & Tayl.) Tuck. Matane, *Dodge 2133.*

* R. POLYMORPHA Ach. Little Chlordorme, *Macoun.*

R. FARINACEA (L.) Ach. R. Cap Chat, *Dodge 2625;* between Mt. Pembroke and Couvert de Chaudron, *Dodge 2624,* Logan range; R. Ste. Anne des Monts, *Dodge 2691.*

USNEA CAVERNOSA Tuck. Between Mont Louis and Lac Mont Louis, *Dodge 2640, 2641.*

U. BARBATA (L.) Web. Lac Perré, *Dodge 2851,* Tabletop range. Var. STRICTA (Schaer.) R. H. Howe, between Mont Louis and Lac Mont Louis, *Dodge 2639.* Var. FILIPENDULA (Stirton) R. H. Howe, between Mont Louis and Lac Mont Louis, *Dodge 2638.* F. HIRTELLA Ach., between Mont Louis and Lac Mont Louis, *Dodge 2637.*

U. PLICATA (L.) Web. * summit, Mt. Albert, *Macoun;* R. Ste. Anne des Monts, *Collins 4645a.*

U. LONGISSIMA Ach. R. Cap Chat, *Dodge 2147.*

*U. TRICHODEA Ach. Gaspé coast, *Macoun.*

ALECTORIA JUBATA (L.) Ach. var. IMPLEXA (Hoffm.) Ach. Mt. Albert, *Macoun;* between Lac Mont Louis and the north fork of R. Madeleine, *Dodge 2630.*

A. CHALYBEIFORMIS (L.) S. F. Gray. Mt. Dunraven, *Dodge 2627.*

A. DIVERGENS (Ach.) Nyl. Mt. Dunraven, *Dodge 2675.*

A. OCHROLEUCA (Ehrh.) Nyl. Summit of Mt. Albert, *Macoun, Dodge 2656;* Lac Perré, *Dodge 2853,* Tabletop range.

A. NIGRICANS (Ach.) Nyl. Summit of Mt. Albert, *Macoun.*

A. SARMENTOSA (Ach.) R. H. Howe. Gaspé, *Macoun.*

A. BICOLOR (Ehrh.) Nyl. Mt. Albert, *Macoun;* Mt. Mattaouisse and Mt. Collins, *Dodge 2631,* Logan range; Lac Perré, *Dodge 2852,* Tabletop range.

CERANIA VERMICULARIS (Sw.) S. F. Gray. *Thamnolia vermicularis* (Sw.) Schaer. Mt. Albert, *Collins 4177a,* * *Macoun.*

PLACODIACEAE

PLACODIUM FERRUGINEUM (Huds.) Hepp, var. DISCOLOR Willey. Gaspé coast, *Macoun 182.*

P. ELEGANS (Link) DC. * R. Madeleine, *Macoun;* Ste. Anne des Monts, *Dodge 2854;* Mt. Albert, *Dodge 2165, 2182;* Capucins, *Collins 4688d.*

P. (BLASTENIA) RUPESTRE (Scop.) Branth & Rostr. R. Ste. Anne des Monts, *Macoun.*

CANDELARIELLA VITELLINA (Ehrh.) Müll.-Arg. *Placodium vitellinum* (Ehrh.) Naeg. & Hepp. R. Ste. Anne des Monts, *Macoun.* Var. AURELLA (Ach.) A. L. Smith. Ste. Anne des Monts, *Dodge 2857;* * R. Ste. Anne des Monts, *Macoun.*

THELOSCHISTACEAE

XANTHORIA PARIETINA (L.) Th. Fr. *Theloschistes parietinus* (L.) Norm. Gaspé coast, *Macoun 16.*

X. POLYCARPA (Sm.) Oliv. *Theloschistes polycarpus* (Sm.) Tuck. Capucins, *Collins 4692a.*

PHYSCIACEAE

* RINODINA TURFACEA (Wahl.) Th. Fr. Fink list.

PHYSCIA CILIARIS (L.) DC. Gaspé coast, *Macoun 40.* Var. CRINALIS (Schleich.) Schaer. Cap Rosier, *Macoun 55;* Gannett Ledge, Bonaventure Island, *Collins 5268.*

P. PULVERULENTA (Schreb.) Nyl. var. LEUCOLEIPTES Tuck. Little Fox River, *Macoun.*

P. STELLARIS (L.) Nyl. Ste. Anne des Monts, *Macoun.*

P. HISPIDA (Schreb.) Tuck. Ste. Anne des Monts, *Dodge 2856;* R. Cap Chat, *Dodge 2866;* between Mont Louis and Lac Mont Louis, *Dodge 2643;* Gaspé coast, *Macoun 56.*

FARLOW HERBARIUM.

TWO ADDITIONS TO THE FLORA OF MASSACHUSETTS.—During the spring excursion of the New England Botanical Club in 1921 I was collecting with Hon. J. R. Churchill in Ashfield, in a swampy meadow at an elevation of about 1700 feet. Here I was much pleased to find numerous specimens of *Carex Michauxiana,* one of the less common sedges of New England. The plant is abundant at similar altitudes in the Green Mountains, notably at Woodford and Somerset in southern Vermont, and is likely to be found in other mountain meadows among the Berkshires.

While driving over the Mohawk Trail on May 19, 1925, I was attracted by the flowering Amelanchiers in a bog in Florida, between the two summits of the Trail. One of them I thought at first was *A. Bartramiana,* but it had more flowers than that species, and bore some resemblance to *A. laevis,* which was also abundant in the swamp, yet in spite of the resemblance it was strikingly different from either of those species. My determination of it was *A. intermedia,* afterward confirmed by Prof. K. M. Wiegand, who kindly examined a specimen for me. In general appearance while in bloom it is intermediate between *A. laevis* and *A. Bartramiana.* It is described in RHODORA, xii. 147–148, 1920.

Specimens of these two plants have been placed in the herbarium of the New England Botanical Club.—CLARENCE HINCKLEY KNOWLTON, Hingham, Massachusetts.

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Farlow, Bot. Lab.,

Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 28. December, 1926. No. 336.

TECHNICAL NAME OF SUGAR MAPLE.

KENNETH K. MACKENZIE.

I AM sorry that in my article on the name in use for the American Sugar Maple, I did not give information enough to enable Mr. Sudworth to understand the question. If reference is made to the preface of Marshall Arbustum Americanum (VII–VIII), the following will be found:

"The author . . . has been induced to draw up this Alphabetical Catalogue of the Forest Trees and Shrubs, natives of the American United States, as mentioned by the best authors, or since discovered by ingenious travellers. In this catalogue are contained their Linnaean Generic and trivial names (or new formed ones where these have been wanting)."

Linnaeus had four "American United States" species of the genus Acer, viz: *rubrum*, *saccharinum*, *pennsylvanicum* and *Negundo*. Marshall gives all of these with the exception of any spelled "*saccharinum*." Instead of this appears the name "*saccharum*," which is merely a misprint for the Linnaean name, occasioned by leaving out the syllable "in." There was not the slightest intention on the part of Marshall to publish this as a new species, or we should have found him using both the names "*saccharinum*" and "*saccharum*" because he was accounting for all "American United States" species of Acer. The French translator and reviser of the work caught and quite properly corrected this typographical error, but he continued the other error made by Marshall and numerous other authors in identifying the Linnaean *Acer saccharinum* with our hard maple instead of with our soft maple.

A very similar tangle had previously been created by Philip Miller (Gard. Dict. Abr. (6th Ed.) 1771 Acer No. 6) where he used the name

Acer sacchatum, giving the Linnaean Latin descriptive phrase for *Acer saccharinum*, and an account of his own of the American Sugar Maple.

In the 1768 edition (8th) of his Gardener's Dictionary he had used the name *Acer saccharinum* in very much the same way. There is nothing known to me to show whether the change to *sacchatum* was an intentional correction in orthography or a mere misspelling.

Anyone using the name appearing in Marshall's work would have hard work to avoid using the prior name appearing in Miller's work. Of course such typographical errors or changes in spelling do not constitute publication of species, and they should be treated as corrections or disregarded entirely.

I am sure that Mr. Sudworth does not believe that a misspelled misidentification amounts to the publication of a new species.

Mr. Sudworth's inference that I would use the name *Acer saccharinum* L. for the sugar maple is quite without justification in anything I wrote. I really wonder how he ever came to have had such a dream. There must have been a hot, sleepy day in Washington.

MAPLEWOOD, NEW JERSEY.

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND

M. L. FERNALD.

(*Continued from p. 225.*)

VERONICA ALPINA L., var. UNALASCENSIS C. & S. Wet quartzite rocks and gravel along brook, Southwest Gulch, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,965, new to Newfoundland. See p. 124.

V. HUMIFUSA Dickson. Wet limestone barrens, slopes and cliffs, general on the West Coast.

EUPHRASIA. The collections of the past two seasons render a complete revision of the American species necessary. This cannot now be presented.

BARTSIA ALPINA L. Damp turf or peaty limestone barrens or talus from Pistolet Bay westward to Half-way Brook; new to Newfoundland. See pp. 105, 106

PEDICULARIS FLAMMEA L. Wet hollows in gravelly limestone barrens one mile back of Savage Cove, *Fernald & Long*, no. 29,034; gravelly and peaty limestone barrens back of Big Brook, *Fernald & Long*, no. 29,035; limestone talus near Half-way Brook, *Pease, Gris-*

com, Gilbert & Hotchkiss, no. 29,036; new to Newfoundland. See pp. 96, 98.

P. PALUSTRIS L. Long known from the region of St. John's; seen from the train in swales and sloughs southward to Petty Harbor. See p. 81.

P. SYLVATICA L. Collected for the first time in America in 1911 by Fernald & Wiegand. Characteristic of peaty slopes and mossy woodland glades from Carbonear to St. John's and vicinity. See pp. 51, 81.

UTRICULARIA GEMINISCAPA Benj. Shallow peaty pool back of strand, Bard Harbor, St. John Bay, *Fernald & Long,* no. 29,042, northward extension from Bay of Islands.

OROBANCHE (APHYLLON) **terrae-novae,** n. sp., *O. uniflorum* simulans; calycibus campanulatis 0.7–1.3 cm. longis extus pilosis, lobis anguste deltoideis acuminatis vel caudatis 4–8 mm. longis; corollis 1.7–2.5 cm. longis arcuatis lacteis vel pallide lilacinis, laciniis oblongis valde ciliatis, ciliis 0.5 mm. longis; floribus inodoris.—NEWFOUNDLAND: gravelly shore of dead-water in Gander River, Glenwood, July 12 and 13, 1911, *Fernald & Wiegand,* no. 6212; springy places in ledges and gravel, north bank of Exploits River, Grand Falls, July 4, 1911, *Fernald, Wiegand, Bartram & Darlington,* no. 6211; under *Picea canadensis,* cool springy glade, interior of southern half of Burnt Cape, Pistolet Bay, August 5, 1925, *Fernald & Long,* no. 29,051, swampy spruce (*Picea canadensis*) woods and thickets, Bard Harbor, St. John Bay, July 29, 1925, *Wiegand, Gilbert & Hotchkiss,* no. 29,049 (TYPE in Gray Herb.); mossy glades in spruce woods, western slope of Bard Harbor Hill, August 26, 1925, *Fernald & Long,* no. 29,053; mossy glades in spruce woods, north of Doctor Hill, St. John Bay, August 24, 1925, *Fernald & Long,* no. 29,052; turfy slopes and steep banks, St. John's Island, St. John Bay, July 31, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss,* no. 29,050; boggy thickets back of Birchy Cove (Curling), July 7, 1910, *Fernald & Wiegand,* no. 4018; talus slope of the marble region between Mt. Musgave and Humber Mouth, July 18, 1910, *Fernald & Wiegand,* no. 4019; woods, Coal River, July 21, 1896, *Waghorne;* Log Cabin, Harry's River, July 11, 1902, *L. L. Dame.*

Orobanche terrae-novae is perhaps merely a geographic variety, but all Newfoundland material, in good flower, has the oblong segments of the corolla with much longer ciliation than in the continental *O. uniflora* L., in which the segments are broader and usually obovate. *O. uniflora* has deliciously fragrant flowers, *O. terrae-novae* odorless, and the calyx of the latter is more copiously pilose than in the former. In *O. terrae-novae* the lower lip has 2 linear yellow lines at the throat; whether they occur in *O. uniflora* cannot at present be stated.

In his very detailed *Monographie der Gattung Orobanche,* Beck von

Mannagetta recognizes only two members of the section *Aphyllon*. The herbarium-material indicates that the section is much more complex, and certainly the species of Pacific North America with linear-subulate or setaceous calyx-segments and purple-violet corollas is quite distinct from the eastern *O. uniflora*. The western plant is

OROBANCHE (APHYLLON) **Sedi** (Suksd.), n. comb. *Aphyllon Sedi* Suksd. Deutsch. Bot. Monatss. xviii. 155 (1900). *A. uniflorum*, var. *occidentale* Greene, Man. Bay Reg. 285 (1894). *Thalesia purpurea* Heller, Bull. Torr. Bot. Cl. xxiv. 313, t. 310 (1897), not *O. purpurea* Jacq. (1762). *A. minutum* Suksd. l. c. (1900). not *O. minuta* Beck von Man. (1890). *Thalesia minuta* (Suksd.) Rydb. Bull. Torr. Bot. Cl. xxxvi. 692 (1909).

GALIUM SAXATILE L. Stony margins of spring-rills by roadside in peaty barrens and about cold spring-head at border of spruce thicket in bog-barrens, Trepassey, *Fernald, Long & Dunbar*, nos. 27,085, 27,086, its first stations in America. See p. 83.

GALIUM BRANDEGEI Gray. Springy slopes and brooksides at head of Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,070, new to Newfoundland. See p. 123.

MITCHELLA REPENS L. Border of wet spruce thicket among gneiss hills, very rare, Port aux Basques, *Fernald, Long & Dunbar*, no. 27,097, the first authenticated record from Newfoundland. See p. 56.

EUPATORIUM MACULATUM L., var. FOLIOSUM (Fern.) Wieg. Meadow below calcareous sandstone escarpments, western face of Bard Harbor Hill and meadow by brook, Bard Harbor, St. John Bay, *Fernald & Long*, no. 29,093, *Wiegand & Gilbert*, no. 29,094, an extension north from Harry's River. See p. 124.

SOLIDAGO LEPIDA DC. Meadow below limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 29,117, 29,118, the second station for the typical form of the species. See p. 124.

S. GRAMINIFOLIA (L.) Salisb., var. NUTTALLII (Greene) Fern. Dry gravelly slopes near Goose Pond, Whitbourne, *Fernald, Long & Dunbar*, no. 27,129. Previously known only from Clarenville.

ERIGERON ACRIS L., var. **arcuans**, n. nom. *E. alpinus* β. Hook. Fl. Bor.-Am. ii. 18 (1834). *E. acris*, var. *debilis* Gray, Syn. Fl. i. pt. 2: 220 (1884) as to Labrador and Hudson Bay plants only. *E. elatus* Greene, Pittonia, iii. 164 (1897), not *E. alpinus* γ *elata* Hook. l. c. *E. acris*, var. *oligocephalus* Fernald & Wiegand, RHODORA, xii. 226 (1910), in large part, but not as to type.

When *E. acris*, var. *oligocephalus* was described two quite different plants were confused under it. The type from Blanc Sablon has much larger heads than the others and later collections from the Newfoundland side of the Straits of Belle Isle show it to be specifically separable from the smaller-headed plant which Hooker called *E.*

alpinus β. and which Greene well described as *E. elatus*. The latter name is quite inappropriate and, as was shown in the original discussion of *E. acris*, var. *oligocephalus*, Greene was in error in identifying his plant with *E. alpinus*, γ *elata* Hook.

The type of *E. acris*, var. *oligocephalus* belongs, according to Dr. Ostenfeld and Mr. Erling Porsild who have independently been over the Newfoundland collections of 1925 with me, to

E. BOREALIS (Vierh.) Simmons, Acta Univ. Lund., n. s. ix. no. 19: 127 (1913). Outside of Greenland *E. borealis* is known in America only from LABRADOR: limestone and calcareous sandstone terraces, Blanc Sablon, *Fernald & Wiegand*, no. 4138 (type of *E. acris*, var. *oligocephalus*). NEWFOUNDLAND: Quirpon Harbor, September 8, 1923, *A. G. Huntsman;* slaty cliffs and talus, Cape Raven, August 12, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,139. See pp. 54, 123.

ANTENNARIA EUCOSMA Fern. & Wieg. Dominant on turfy limestone barrens and slopes from Pistolet Bay westward to Four-Mile Cove; previously known only from Table Mt., Port-à-Port Bay and from Cape St. George. See pp. 98, 105.

A. CANA (Fern. & Wieg.) Fern. Dominant on gravelly limestone barrens, Pistolet Bay to Ingornachoix Bay, and more locally to Bay St. George. See pp. 62, 96, 103, 105.

A. VEXILLIFERA Fern. Turfy limestone barrens, Cook Point, *Fernald & Gilbert*, no. 29,171; dry mixed gravel on crest southeast of Boat Harbor, *Fernald, Wiegand & Long*, no. 29,172. Previously known only from the Shickshock Mts. See pp. 105, 107.

ANTENNARIA **Longii** n. sp., humifusa, stolonibus foliosis confertis perbrevibus (ad 1 cm. longis); foliis basilaribus late spathulatis vel anguste cuneato-obovatis apice rotundatis vix mucronatis 5–11 mm. longis 2.5–4 mm. latis supra albidis, tomento denso minuto; caule florifero 1–6 rarissime deinde –9 cm. alto; foliis caulinis 4–8 subdistantibus, imis oblanceolatis obtusis, mediis linearibus 0.7–1.5 cm. longis 1–1.5 mm. latis subulato-mucronatis, superioribus 1–4 apice scarioso oblongo-lanceolato 1.5–2 mm. longo munitis; capitulis femineis 1–6 corymbosis turbinato-campanulatis; involucro 7–10 mm. alto basi lanato; bracteis 2–3-seriatis subaequalibus tenuissimis, exterioribus oblongis basi castaneis apice sordidis squarrosisque, interioribus fulvis oblongo-lanceolatis acuminatis adscendentibus; corolla 4–4.5 mm. longa; stylo flavescenti deinde brunneo; planta mascula ignota.—Straits of Belle Isle, NEWFOUNDLAND: dry limestone gravel, Schooner (or Brady) Island, Pistolet Bay, July 18, 1925, *Pease & Long*, no. 29,177 (TYPE in Gray Herb.); dry limestone rock-barrens, Boat Harbor, July 19, 1925, *Fernald, Wiegand & Long*, no. 29,178; gravelly limestone barren, Four-Mile Cove, July 20, 1925, *Fernald, Wiegand & Long*, no. 29,179; dry gravel of limestone

barrens, Cape Norman, August 13, 1925, *Wiegand & Long*, nos. 29,180, 29,181.

A. Longii is nearest related to *A. **vexillifera*** Fernald, but is at once distinguished by its larger heads; broader involucral bracts, the outer series with strongly squarrose tips; and the few appendaged cauline leaves. *A. **vexillifera***, originally described from the Shickshock Mts. of Gaspé but now known from northwestern Newfoundland as well, has the fulvous hemispheric-campanulate involucre only 6–7 mm. long; its uniformly ascending bracts narrower than in *A. Longii;* and all but the lowest cauline leaves tipped by a long scarious appendage. See p. 106.

A. STRAMINEA Fern. Local on the West Coast, previously known northward to Pointe Riche. Our recent collections are: dry limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,168; turfy crests of limestone barrens, Shoal Cove, *Pease & Griscom*, no. 29,176; dry gravelly limestone barren, Savage Point, *Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss*, no. 29,175; open spots in limestone barrens near Ice Point, St. Barbe Bay, *Wiegand, Gilbert & Hotchkiss*, no. 29,167; dry limestone barrens, Brig Bay, *Fernald, Long & Dunbar*, no. 27,187; dry gravelly limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert, & Hotchkiss*, no. 29,170. See pp. 79, 97, 105.

A. ALBICANS Fern. Very local on the West Coast, previously known only fron Table Mt., Port-à-Port Bay. The new stations are: dry limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,164; dry limestone gravel, Schooner (Brady) Island, *Pease & Long*, no. 29,166; dry gravel of limestone barren, Cook Point, *Fernald & Gilbert*, no. 29,165; dry limestone gravel near Ice Point, St. Barbe Bay, *Wiegand, Gilbert & Hotchkiss*, no. 29,161. See pp. 97, 105.

ANTENNARIA **Wiegandii**, n. sp., humifusa, stolonibus foliosis (ad 2 cm. longis); foliis basilaribus anguste cuneato-obovatis apice obtusis mucronatis 6–13 mm. longis 2–4 mm. latis supra viridibus sparse arachnoideis vel glabratis; caule florifero 5–13 cm. alto gracili; foliis caulinis 7–10, imis confertis lineari-oblanceolatis mucronatis, mediis linearibus 7–10 mm. longis 1–1.5 mm. latis apice unguiculato-subulatis, superioribus 4–6 apice scarioso lanceolato 2–3 mm. longo munitis; capitulis femineis 2–4 corymbosis hemisphaerico-campanulatis basi rotundatis; involucro 6 mm. alto basi lanato; bracteis 2–3-seriatis, exterioribus anguste oblongis obtusis adscendentibus basi castaneis apice fulvis, interioribus lanceolatis fulvis; corolla 4.5 mm. longis apice purpurascentibus; acheaniis 1.2 mm. longis; planta mascula ignota.—NEWFOUNDLAND: turfy limestone barrens, St. John's Island, St. John Bay, July 31, 1925, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,153.

A. Wiegandii is the nearest approach yet found south of northern Labrador to the arctic *A. alpina* (L.) Gaertn. In the distinctly mucronate basal leaves it is very similar to *A. alpina*, all the other small-leaved species of Newfoundland and Gaspé having blunt basal leaves. *A. alpina*, however, has much narrower and more elongate rosette-leaves which are narrowed to tip; the upper cauline leaves have broader appendages; the corymb, except in var. *ungavensis*, is denser; the heads are larger (involucre 7–9 mm. high); and the achenes are longer (1.3–1.5 mm. long).

In the green upper surfaces of the basal leaves *A. Wiegandii* resembles *A. spathulata* Fernald, but it is at once distinguished by the smaller leaves with less rounded, but more mucronate tips; more crowded and assurgent stolons; looser inflorescence, with smaller heads (involucres of *A. spathulata* 7–10 mm. high) with much narrower and darker involucral bracts, and shorter corollas and achenes (in *A. spathulata* the corollas 5.5–6 mm. long, the achenes 1.4–1.7 mm. long).

A. SPATHULATA Fern. Turfy limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,182; turfy slopes and steep banks bordering limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,183; northern extension from Pointe Riche. See p. 105.

A. SPATHULATA, var. CONTINENTIS Fern. & St. John. Turfy limestone barrens, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,184; previously known only from Natashquan, Saguenay Co., Quebec, See p. 105.

ANAPHALIS MARGARITACEA (L.) B. & H., var. SUBALPINA Gray. Gravelly bank near sea, Cape Onion, *Fernald*, no. 29,186, a northern extension from Bonne Bay; the solitary colony locally famous as a curiosity.

GNAPHALIUM NORVEGICUM Gunn. Wet quartzite rocks and seepy banks in gulches of Highlands of St. John: Deer Pond Brook, *Fernald & Long*, nos. 29,187, 29,189; Southwest Gulch, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,190. Turfy barrens and slopes, Sacred Island, *Wiegand, Gilbert & Hotchlkiss*, no. 29,188. New to Newfoundland. See pp. 116, 122.

TANACETUM HURONENSE Nutt., var. TERRAE-NOVAE Fern. Dominant on turfy or gravelly limestone barrens and slopes from Pistolet Bay to Ingornachoix Bay. See pp. 54, 80, 100.

ARTEMISIA BOREALIS Pall. Dry gravelly limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,203; previously known in Newfoundland only from Table Mt., Port-à-Port Bay and from Cape St. George. See p. 118.

ARNICA TERRAE-NOVAE Fern. Turfy limestone barrens, Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,209, *Fernald & Long*, no. 29,210 ½; turfy limestone barrens, Cook Point, *Fernald & Gilbert*, no. 29,214; peaty and bushy areas on limestone barrens one mile back of Savage Cove, *Fernald & Long*, no. 29,207, *Fernald, Pease & Long*, no. 29,208; previously known only from Cape St. George. See pp. 96, 103, 105.

A. PULCHELLA Fern. Turfy limestone barrens, Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 29,213; mossy talus of diorite cliffs, Ha-Ha Mountain, *Fernald & Long*, no. 29,215; previously known only from Table Mt., Port-à-Port Bay. See pp. 96, 106, 120.

A. CHIONOPAPPA Fern. Turfy limestone barrens, Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,209 ½, *Fernald & Long*, no. 29,210; turfy limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,211; dry white limestone bluff opposite western escarpment of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 29,212; previously known in Newfoundland only from Table Mt., Port-à-Port Bay and from Cape St. George. See pp. 96, 103, 118.

A. GRISCOMI Fern. Crests of turfy slopes and steep banks bordering limestone barrens, St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,216; previously known only from the Shickshock Mts., Gaspé. See p. 118.

SENECIO PAUCIFLORUS Pursh. Turfy slopes of slaty hills, Little Quirpon, *Wiegand, Gilbert & Hotchkiss*, no. 29,218; peaty and turfy brookside east of the central valley of Quirpon Island, *Fernald & Long*, no. 29,219; slaty cliffs and talus, Cape Raven, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,221; mossy brookside, Sacred Island, *Fernald & Long*, no. 29,220; calcareous cliffs and talus, western faces of Doctor Hill and Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 29,222, 29,223; the first authenticated records from Newfoundland. See pp. 121, 125.

TARAXACUM. The indigenous species of *Taraxacum* are very numerous in the ancient flora of unglaciated northwestern Newfoundland. Some, like T. LAPPONICUM Kihlm. (p. 60) and T. CERATOPHORUM (Ledeb.) DC. (p. 76), are well known circumpolar species; others, like T. LACERUM Greene (p. 60) and T. DUMETORUM Greene are species previously known only from the Rocky Mts.; T. LATILOBUM DC. (p. 80) is endemic; and several others are apparently local endemics. A series is being studied by Dr. Handel-Mazzetti and a detailed report upon them cannot yet be given.

LACTUCA (MULGEDIUM) **terrae-novae** n. sp., biennis, caule erecto glabro robusto simplici 1 m. alto; foliis glabris runicnato-pinnatifidis elliptico-ovatis, mediis 1.5–2 dm. longis 1–1.2 dm. latis acuminatis lobis oblique ovatis horizontaliter divergentibus grosse dentatis,

superioribus apice caudatis; capitulis racemoso-paniculatis; involucris urceolato-campanulatis valde calyculatis 1.2–1.5 cm. altis, bracteis exterioribus ovatis acutis interioribus lanceolatis obtusis apice arcuatis; corollis coerulescentibus deinde purpurascentibus; achaeniis oblique lanceolato-oblongis rufescentibus 5–6 mm. longis 1–1.4 mm. latis in rostrum firmum 1 mm. longum attenuatis; pappo niveo.—NEWFOUNDLAND: meadow below limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, August 21, 1925, *Fernald & Long*, no. 29,290.

Lactuca terrae-novae is known from only a single plant. When Mr. Long and I found it we took three specimens, but upon maturing in press two of them prove to be typical *L. spicata* (Lam.) Hitch., which is frequent in western Newfoundland; but the third specimen departs at once from the others in its white pappus, orange-brown or reddish unmottled achenes and definite slender but firm beak; *L. spicata* having sordid pappus, grayish-brown to blackish conspicuously mottled achenes and stouter neck. It may prove, when the new plant is better known, that it is an extreme of *L. spicata*. If so, the characters of pappus and beak, which have so long proved constant in the genus will have most singularly lost their constancy. No species of *Lactuca* other than these two are known in Newfoundland; *L. terrae-novae* cannot, therefore, be considered a hybrid. See p. 124.

CREPIS NANA Richardson. Dry limestone barrens, very scarce, northern half of Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,278; previously known in eastern America only from the Torngat region of northern Labrador. See pp. 103, 104.

HIERACIUM GROENLANDICUM Almq. Thicket by Big Brook, *Fernald & Long*, no. 29,267; thickets on slaty hills back of Little Quirpon, *Fernald & Gilbert*, no. 29,268; also noted (immature) on Burnt Cape; the mature plant from Little Quirpon is a close match for authentic Greenland material. See pp. 99, 121.

H. CANADENSE Michx., var. HIRTIRAMEUM Fern. Glades near brook, Bear Cove, *Wiegand & Pease*, no. 29,275; glades in spruce thickets bordering limestone barrens, Yankee Point, *Fernald, Wiegand & Long*, no. 29,270; northward extension from Port-à-Port Bay and the Exploits Valley.

MR. TAYLOR VS. "GRIER'S NOTES ON THE FLORA OF LONG ISLAND."

N. M. GRIER.

THE title refers to certain publications of the writer (**1**–**3** in appended bibliography), and their criticism by Taylor (**4** and **6**). In connection with these the review of Skutch (**5**), will be of interest to botanists desiring to make use of the varied plant resources of the vicinity of the Biological Laboratory, Cold Spring Harbor, N. Y. A list of *addenda et corrigenda* will be issued to the latter article referred to (**3**) as opportunity permits. The basis of these plant lists consists of records made by botanists working at the Biological Laboratory over many years.

I am unaquainted with Mr. Taylor personally but if he had written me, I might have saved him the arduous task of "needlessly checking through hundreds of such records on the off chance that some wheat might turn up among the chaff." (Remarks in quotation are those of Mr. Taylor.) I could have reminded him that the papers (**1**, **2**) were especially designed for that purpose. It is true that one article listed several species known so far only in cultivation from Long Island, but the majority of such species are listed by Gray as falling within the region covered by that manual. It therefore seemed a contribution to our knowledge of the plant life of the island to indicate their presence there, if only for the convenient tracing of changes in the plant life in future years, as species may become naturalized or disappear. Long Island is of interest because it most probably has a larger proportion of introduced plants for its area than any other region in the country. As it is, at least two of the species to whose inclusion in my lists Mr. Taylor objects as growing only under cultivation, have escaped in the immediate vicinity of Cold Spring Harbor. They are *Paulownia tomentosa* and *Centaurea cyanus*. It is certain that by diligent inquiry, Mr. Taylor can locate others. Is it possible that Mr. Taylor is not interested in such records? Is one to infer that Long Island can no longer offer encouragement to field workers?

The next article (**2**), which Mr. Taylor neither approves nor specifically criticizes contains records of Cryptogams exclusive of Pteridophyta, groups of plant life in which he does not seem to be interested. Here, however, I wish to acknowledge the courteous criticisms of

Dr. A. J. Grout who wrote to me that he had already listed certain mosses I had recorded in this article as being previously unknown to the Cold Spring Harbor region. This has been the only direct criticism I have received on these two papers. The last contribution has seemed of value to other botanists because it puts on record certain species now inhabiting the island which will tend to disappear with the expansion of the New York City district.

The rest of Mr. Taylor's complaints are directed toward the compilation reprinted for practical reasons under the general title of "Native Flora of the Vicinity of Cold Spring Harbor, N. Y." (**3**). This title is open to serious objection on the part of some because according to a later note by Taylor (**6**), only 1802 of the 1865 living species given are *native*, the rest being introduced, naturalized, or *non est inventus!* However, the true status of most of these had been brought out previously (**1**), and qualified by the statement in (**3**), p. 12–24 that to the list were added some plants frequently encountered on the field excursions of the botanical classes. All except one of these species are included in Gray's Manual, and their inclusion represents special consideration for botanists interested in the Flora of Long Island for other than floristic or geographical reasons. Mr. Taylor further objects to the title by endeavoring to make some of the localities appear much farther from Cold Spring Harbor than they really are. However, enthusiastic and accurate students of the flora will under the summer conditions of transportation be able to explore any of the localities given in the list and return in a day, as the records included lie well within a 25-mile radius. Mr. Taylor himself stretches the word "vicinity" a great deal farther than this when he lists plants from Philadelphia in his Flora of the Vicinity of New York.

Vitis-Idaea Vitis-Idaea (L.) Britton, a species which Mr. Taylor for some reason transposed to *Vaccinium* in his review, is known in cultivation on at least three estates comparatively near Bayville, L. I. Since it is also known that birds eat the fruit, this fact may explain my finding it growing wild. Hence there was no occasion for getting excited over the "find" any more than was the case when the crowberry, *Empetrum nigrum*, was found in cultivation at some of these places previous to 1924. Fossil plants from Staten Island were included in the list because further search on Long Island will in fair probability uncover most of the same species there, and such a probability has its interest for students of the fossil flora. This fact

should have been explicitly stated in the publication as it was in the case of other plant species included for similar reasons, but it was felt that the inference would be clear to those familiar with the geology of Long Island.

Taylor (6) further cites 38 *native American species* in the list not definitely known from Long Island, according to his impressions. Since he does not qualify his statement by saying that these species are found there in cultivation only, the following should be considered with this point in view. Some of these species were copied into the "Native Flora" from Jelliffe's Flora of Long Island with or without additional confirmation by the writer, namely: *Thuja occidentalis, Sparganium simplex, Sagittaria rigida, Carex laxiflora, Carex sterilis, Juncoides carolinae* (Jelliffe seems to have confused this with *J. pilosum*), *Myrica cerifera, Betula nigra, Ribes triste*(possibly confused by Jelliffe with *R. rubrum*), *Rubus odoratus, Acer negundo, Acer pennsylvanicum, Viola blanda, Viola labradorica, Aralia spinosa, Thaspium trifoliatum, Chionanthus virginica.* In absence of supporting specimens I will gladly inform Mr. Taylor where many of these plants may be found, and he may consider the possibility of their escape from cultivation. The authenticity of other of these records is best taken up with Dr. Jelliffe.

Other species were copied into the Native Flora from a check list of the Cold Spring Harbor Flora kept at the Department of Genetics, Carnegie Institution of Washington. These are *Carex Asa-Grayi, Carex interior, Salix petiolaris, Amelanchier spicata. Potentilla Robbinsiana* instead of *P. pumila* was erroneously given from this region. *Ibidium praecox* was collected by Professor Johnston, presumably near Cold Spring Harbor according to a record found here. *Aster Herveyi* is also checked on the list of the Station, verifying our record of it. *Trillium grandiflorum, Rhododendron maximum,* and *Cornus stolonifera* are found in cultivation in the vicinity but only the latter was so indicated in the Native Flora. *Quercus phellos* whose presence on Long Island Mr. Taylor doubts, is listed by Britton and Brown from there, and is in cultivation at least on the Matheson estate, Lloyd Neck. Our record of *Quercus ellipsoidalis* from Bayville, which is not approved by Mr. Taylor is of interest because Britton and Brown tend to regard it as a hybrid between *Q. velutina* and *Q. coccinea*, both of these species being found in the adjacent region.

Unfortunately, the accidental destruction of specimens used in

identifying the following plants leaves that point unsettled until future verification is possible, in the case of the following species; *Xanthoxalis grandis, Peramium ophioides, Potamogeton alpinus, Panicum Wilcoxianum, Alsine borealis, Carex tenuiflora, Scirpus sylvaticus, Chamaesyce humistrata, Galium trifidum pusillum, Heliopsis scabra,* and *Millegrana radiola.* The impressions concerning the majority of these are positive however, as they had the verification of other botanists and their presence was otherwise substantiated by the reported distribution of the species. Some are undoubtedly waifs for whose reception Long Island seems well adapted, while in others there is the possibility of mistaken identification under the circumstances. *Chamaecyparis thyoides* from the White Cedar Swamp at Merrick was inadvertently confused with *Thuja occidentalis,* in one of the lists, a fact however which would lead no worker astray who consulted the bibliography given with the paper.

As an aid to the very evident purposes my papers have endeavored to serve, I have welcomed certain of Mr. Taylor's remarks, and especially his last (**6**). On the whole however, he has shown a tendency to turn the wholesome flow of his criticism into a devastating flood from which I have been only saved by the life preserving facts cited!

Dartmouth College.

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1. Grier, N. M. Unreported Plants from Long Island. I. Pteridophyta and Spermatophyta. Torreya **24**: 71–76.

2. ——— Unreported Plants from Long Island. II. Cryptogams Exclusive of Pteridophyta. Torreya **25**: 5–10; 29–35.

3. ——— The Native Flora of the Vicinity of Cold Spring Harbor, L. I., N. Y., Amer. Mid. Nat. **9**: Nov., Jan., May, July, Sept. 1924–25.

4. Taylor, N. Grier's Notes on the Flora of Long Island. Rhodora **27**: 213–15.

5. Skutch, A. F. The Native Flora of the Vicinity of Cold Spring Harbor, L. I., N. Y. Torreya **26**: 37–38. A review.

6. Taylor, N. Notes and Corrections on N. M. Grier's Native Flora of the Vicinity of Cold Spring Harbor, L. I. A mimeographed list issued in July 1926 from the Brooklyn Botanic Garden.

Hieracium canadense, var. hirtirameum in northern Michigan.—The occurrence of *Hieracium canadense* Michx., var. *hirtirameum* Fernald upon Isle Royale, Michigan, may be reported. It was there collected by S. C. Stuntz & C. E. Allen, August 8, 1901. It is represented by one sheet in the herbarium of the University of Wisconsin, which departs from the description of this variety in having the branches of the inflorescence sparsely long-hirsute instead of copiously so. The plant is 8 dm. tall, and does not show the aberrant development described in Rhodora xvii. 20 (1915). Another specimen taken in this region by the same collectors is typical *H. canadense*.

For a discussion of the occurrence on Isle Royale of plants centering otherwise about the Gulf of St. Lawrence, see Fernald, Mem. Am. Acad. Arts & Sci. xv. no. 3: 317 (1925).—N. C. Fassett, University of Wisconsin.

Vol. 28, no. 335, including pages 209 to 232, was issued 20 December, 1926.

ERRATA

Page 21, line 8 from bottom, *for* aluvium *read* alluvium
" 36, " 22, for *pyromidata* read *pyramidata*
" 38, " 2, *for* Dumont *read* Dumort
" 50, " 30, for *pro-* read *de-*
" 60, " 18, for *disjunsta* read *disjuncta*
" 62, " 3, for *simpliuscula* read *simpliciuscula*
" 70, " 29, for Planys read Plants
" 85, " 29, *for* Schreck *read* Schrenck
" 106, " 22, *for* Ostenfield *read* Ostenfeld
" 139, lines 19–34 *for* Herman *read* Hermann
" 146, line 29, *for* ecxeeding *read* exceeding
" 147, " 31, *for* languine *read* lanugine
" 151, " 24, *for* presision *read* precision
" 156, " 5, *for* up-carving *read* up-curving
September cover, line 4 of contents, for **Lcopodium** read **Lygodium**
Page 168, line 27, *for* aberrent *read* aberrant
" 190, " 12, for MYRYILLIFOLIA read MYRTILLIFOLIA
" 191, " 10, for Utrica read Urtica
" 205, last line, *for* Ablert *read* Albert

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